

Pre Calculus 11
Final Exam Review

Name _____

Date _____

Determine whether the sequence is arithmetic, geometric, or neither.

- 5, 7, 9, 11, 13
- 7, 49, 343
- 16, -19, -22, -28, -31
- 8, 6.5, 5, 3.5, 2
- $-3\sqrt{2}$, -6, $-6\sqrt{2}$, -12
- $6 + 1 + \frac{1}{6} + \dots$
- $1 + (1.04)^{-1} + (1.04)^{-2} + \dots$
- $\frac{1}{9} + \frac{1}{3} + 1 + 3 + \dots$
- If the first term of an arithmetic progression is -8.4 and the common difference is $\frac{3}{5}$, find the next three terms.
- Find the 43rd term of the arithmetic sequence -124, -122, -120, ...
- Find the common difference if the first term of an arithmetic sequence is 16 and the 9th term is 9.6.
- Find the number of terms in the arithmetic sequence -17, -14, -11, ..., 46.
- Which term of the arithmetic progression 2, 9, 16, ... is 142?
- What is the sum of the series $3 - 5 - 13 \dots - 229$?
- In an arithmetic series, find the sum of the first n terms if the first term is -5, the common difference is 2, and the n th term is 79.
- Find the sum of the first 43 terms of the sequence -18, -15, -12, ...
- The first 3 terms of an arithmetic progression are 1, 4, and 7. Find the 47th term and the sum of the first 47 terms.
- In a geometric progression, the first term is 2 and the common ratio is -3. State the next 3 terms.
- Find the common ratio and the next 2 terms for the geometric sequence $12, -3, \frac{3}{4}, \dots$
- In a geometric progression, the first term is 100 and the common ratio is $\frac{1}{2}$. Find the 12th term.
- The 3rd term of a geometric progression is 12 and the 5th term is 48. Find the first 2 terms.
- If k , 6, and 10 are consecutive terms of a geometric sequence, find the value of k .
- Find the sum of the geometric series $4 + 2 + 1 + \dots + \frac{1}{16}$.
- In a geometric progression, the first term is -3 and the common ratio is -2. Find the sum of the first 7 terms.
- In a geometric progression, the 2nd term is $4\sqrt{2}$ and the 5th term is 128. Find the sum of the first 4 terms.
- Determine the sum of the infinite geometric series:

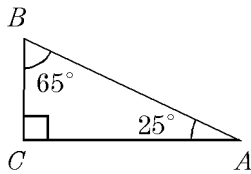
$$70 - 14 + \frac{14}{5} - \frac{14}{25} + \dots$$

Simplify.

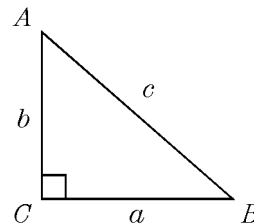
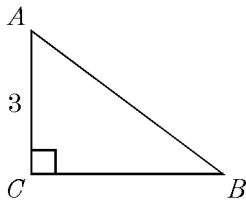
27. $\sum_{k=2}^7 2k$

28. $\sum_{m=1}^8 (10 - m)$

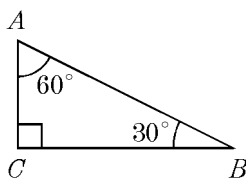
29. The seats in a local theater are arranged so that there are 64 seats in the first row, 62 seats in the second row, 60 seats in the third row, and so on for 24 rows altogether. How many seats are in the last row? How many seats are in the theater?
30. If $a - 2$, $a + 2$, and $a + 17$ are consecutive terms in a geometric sequence find:
- the value of a
 - the value of r
31. In $\triangle ABC$, $\angle C = 90^\circ$, $AC = 3$, $BC = 4$, and $AB = 5$. Find $\cos \angle A$.
32. In $\triangle ABC$, $\angle C = 90^\circ$, $AC = 3$, $BC = 4$, and $AB = 5$. Find $\cot \angle B$.
33. Find $\sin 32^\circ$.
34. Find $\tan 45^\circ$.
35. Find $\sin \angle A$.
36. Find $\cos \angle A$.



37. If $\sin \theta = \frac{5}{7}$, find θ to the nearest degree.
38. If $\tan \angle K = \frac{7}{10}$, find $\angle K$ to the nearest degree.
39. If $\sin \angle B = \frac{3}{4}$, find AB .
40. If $a = 7$ and $b = 9$, find $\angle A$ to the nearest tenth of a degree.

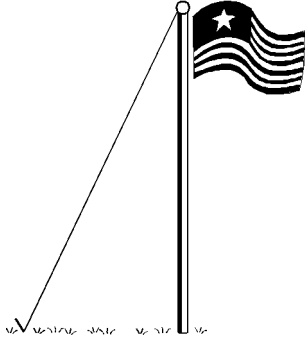


41. Find $\sin 30^\circ$.
42. Find $\sin 60^\circ$.
43. Find $\sin 45^\circ$.
44. Find $\cos 30^\circ$.
45. If $AC = 1$, find BC .
46. If $AB = 2$, find BC .

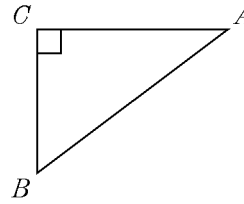


47. When an 11 foot 11 inches tall tree casts a 10 inch long shadow, what is the angle of elevation of the sun?
48. If $\cos \angle F = \frac{4}{5}$, find $\tan \angle F$.

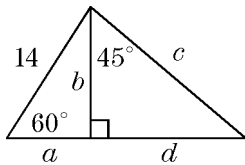
49. A wire 32 feet long is attached to the top of a flagpole 23 feet long. Approximately what is the measure of the angle the wire makes with the ground? Round your answer to the nearest tenth of a degree or nearest ten minutes.



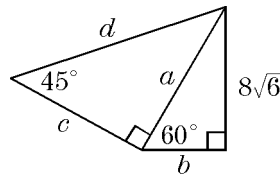
50. Solve the right triangle if $\angle A = 41^\circ$ and $b = 12.5$ centimeters. Give lengths to 3 significant figures and angles to the nearest tenth of a degree.



51. Find the exact value of each labelled part in the figure.



52. Find the exact value of each labelled part in the figure.



53. $b = 45, \alpha = 56^\circ, \beta = 72^\circ$

54. $b = 27, a = 54, \beta = 30^\circ$

55. $a = 9, b = 12, \alpha = 47^\circ$

56. $a = 6.9, c = 11.4, \beta = 141^\circ$

57. $a = 4, b = 5, \gamma = 30^\circ$

58. Two fire towers, at points A and B , are on a lakeshore 40 kilometers apart. Each has visual contact with a ranger at point C . If $\angle CAB = 20^\circ 30'$ and $\angle CBA = 110^\circ$, how far is the ranger from point A ?

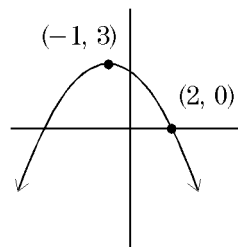
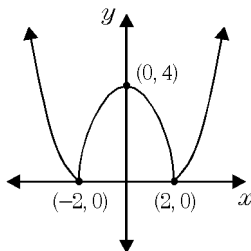
Solve.

59. $p^2 + 32 = 128$

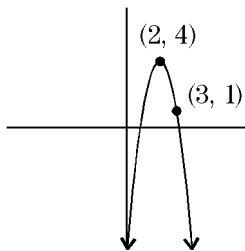
60. $14 - 17m = (2m - 3)^2$

61. What is the equation of the given graph?

- 62.



63.



Write the equation of the conic in standard form.

$$65. \quad \begin{aligned} 4x^2 &= y^2 + 16 \\ x^2 + 2y^2 &= 4 \end{aligned}$$

$$67. \quad \begin{aligned} x^2 &= 36 - y^2 \\ x^2 + (y + 4)^2 &= 12 \end{aligned}$$

Solve.

$$69. \quad \begin{aligned} y - 2x - 3 &= 0 \\ x^2 - y &= 0 \end{aligned}$$

$$71. \quad \begin{aligned} y - 2x &= 1 \\ x^2 + (y - 1)^2 &= 5 \end{aligned}$$

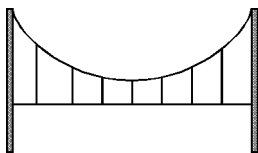
Graph.

$$73. \quad \begin{aligned} x + 2 &> y \\ y + 1 &> x^2 \end{aligned}$$

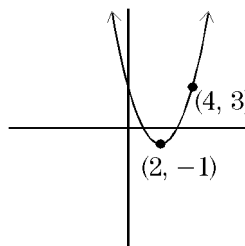
$$75. \quad \begin{aligned} y &\geq x^2 \\ y &< x + 2 \end{aligned}$$

77. What is the range of the relation defined by $y - 5 = -\frac{1}{4}(x + 2)^2$?

79. The main cables of a suspension bridge are 50 feet above the road at the towers and 10 feet above the road at the center. The road is 200 feet long. Vertical cables are spaced every 20 feet. The main cables hang in the shape of a parabola. Find the equation of the parabola.



64.



$$66. \quad \begin{aligned} y^2 &= 7 - (x - 1)^2 \\ x^2 + y^2 &= 4 \end{aligned}$$

$$68. \quad \begin{aligned} 2x^2 + y^2 &= 43 \\ xy &= 15 \end{aligned}$$

$$70. \quad \begin{aligned} y &= 4x^2 - 8 \\ y &= 3x + 14 \end{aligned}$$

$$72. \quad \begin{aligned} 4x^2 + y^2 &= 13 \\ 2x - y &= 1 \end{aligned}$$

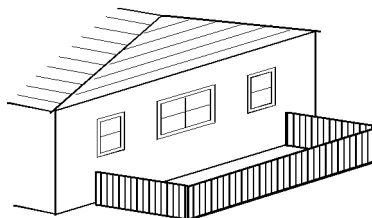
$$74. \quad \begin{aligned} 3(y - 5) &> (x + 2)^2 \\ y &\leq \frac{x}{3} + 7 \end{aligned}$$

76. What is the y -intercept of the parabola $y = -2(x + 3)^2 + 8$?

78. Sketch a graph of the following quadratic, labelling the vertices and intercepts to the nearest 10th.

$$y = -3(x - 2)^2 + 5$$

80. A rectangular patio is surrounded on three sides by a fence (the remaining side is up against the house). If the area of the patio is 38m^2 , and the total length of fence is 18 m, what is the length and width of the patio?



81. The equation of the axis of symmetry of a parabola is $x + 2 = 0$ and one point on the graph is $\mathbf{P}(5, 3)$. Find another point on the graph.

82. A rectangular swimming pool is 12 meters long and 8 meters wide. It is surrounded by a cement walkway of uniform width. The area of the walkway is twice the area of the pool. How wide is the walkway?

Simplify.

$$83. \sqrt[3]{8a^3}$$

$$84. -\sqrt[5]{\frac{1024a^5b^{10}}{16,807}}$$

$$85. \sqrt[3]{\frac{-125x^5y^4z^7}{8x^2y^{10}z^4}}$$

$$86. \sqrt[3]{\sqrt[3]{512m^9n^{18}}}$$

$$87. -\frac{5}{2}\sqrt{40} \cdot 3\sqrt{60}$$

$$88. \left(-\frac{2\sqrt{15}}{3}\right)(2\sqrt{30})(-\sqrt{45})$$

$$89. \sqrt{8a^5}(-\sqrt{2a^3})$$

$$90. \sqrt{33c^2d} \cdot \sqrt{66d^5c^5}$$

$$91. 2cd\sqrt{5c^3d} \cdot \sqrt{55cd^2}$$

$$92. \sqrt{3a+6} \cdot \sqrt{3a-6}$$

$$93. \frac{8\sqrt{11}}{3\sqrt{5}}$$

$$94. \sqrt{\frac{1}{5}} \cdot \sqrt{\frac{2}{3}}$$

$$95. \frac{\sqrt[3]{8}}{\sqrt[5]{-32}}$$

$$96. \frac{5n}{\sqrt{15n}}$$

$$97. \frac{3e^4f^7}{\sqrt{12e^2f^3}}$$

$$98. \frac{\sqrt{x-y}}{\sqrt{x^2y-xy^2}}$$

$$99. -\sqrt{121} + \sqrt{144} - \sqrt{49}$$

$$100. 2\sqrt{80} - 3\sqrt{45} + 3\sqrt{245}$$

$$101. \sqrt{49e^2} + \sqrt{64e^3}$$

$$102. -3cd\sqrt{75c} + 2\sqrt{12c^3d^2}$$

$$103. -3y\sqrt[5]{64y^6} - 2\sqrt[5]{486y^{11}}$$

Solve.

$$104. 18 - \sqrt{3m^2} = 0$$

$$105. \sqrt{a+6} = \sqrt{3a-7}$$

$$106. 3 = a + \sqrt{a-1}$$

$$107. \sqrt{w} + \sqrt{7} = \sqrt{w+7}$$

$$108. \sqrt{m+2} + 2 = \sqrt{3m+4}$$

$$109. m^2 + 5m = 8 - \sqrt{m^2 + 5m - 2}$$

$$110. \frac{-4x}{x^2 + 3x}$$

$$111. \frac{8x + 12}{4x + 20}$$

$$112. \frac{6x^2 + 2x}{4x^3 + 2x}$$

$$113. \frac{k^2 + 5kn + 6n^2}{k^2 + 17kn + 30n^2}$$

$$114. \frac{\frac{1}{a} - a}{\frac{3}{a}}$$

$$115. \frac{\frac{3}{2u} + \frac{2}{u^2}}{\frac{4}{u} - \frac{3}{2u^2}}$$

$$116. \frac{x-2}{x^2-4} \cdot \frac{x^2-2x-8}{x+2}$$

$$117. \frac{w^2 - w - 20}{w - 5} \cdot \frac{w^2 + 7w + 12}{w^2 + 8w + 16}$$

$$118. \frac{n^2 + 6n + 5}{n^2 + 2n - 8} \cdot \frac{n^2 - 5n + 6}{n^2 + 2n - 15}$$

$$120. \frac{y^4 - 13y^2 + 36}{y^2 - 4} \div \frac{y^2 - 5y + 6}{y^2 - 3y + 2}$$

$$122. 14 = \frac{k - 14}{k - 1} + 4k$$

$$124. \frac{3}{1 + t} = \frac{5}{2t}$$

$$126. \frac{5}{r} = \frac{6}{r^2 + 8r} - \frac{3}{r + 8}$$

$$128. \frac{7}{a^2 - 7a + 12} - \frac{1}{a^2 - a - 12} = \frac{6}{a^2 - 16}$$

$$130. 18 = \left| 6 + \frac{k}{3} \right|$$

$$132. |1 - 2z| = 4 + z$$

Solve.

134. The reciprocal of a number is 3 more than the reciprocal of 7 times the number. Find the number.

136. The seats in a local theater are arranged so that there are 64 seats in the first row, 62 seats in the second row, 60 seats in the third row, and so on for 24 rows altogether. How many seats are in the last row? How many seats are in the theater?

138. Mrs. Morris invested in a California wine company. Each year after the first year, her investment earned her 1.5 times as much as in the previous year. If she earned \$31,172 during the first 6 years, approximately how much did she earn in the first year? How much did Mrs. Morris earn in the sixth year?

$$119. \frac{a^2 - 4}{2a + 6} \div \frac{a^2 + 7a + 10}{4a + 12}$$

$$121. \frac{5}{8 - 4r} = \frac{3}{r^2 - 2r}$$

$$123. \frac{2}{z + 2} + \frac{13}{z^2 - 4} = \frac{z}{z - 2}$$

$$125. 1 - \frac{2t - 1}{5} = \frac{4 - 3t}{6}$$

$$127. \frac{t^2 + 12}{t^2 - t - 20} + \frac{t + 6}{t - 5} = \frac{2t + 3}{t + 4}$$

$$129. 9 = |5 - 4p|$$

$$131. |2r + 18| = 2 + r$$

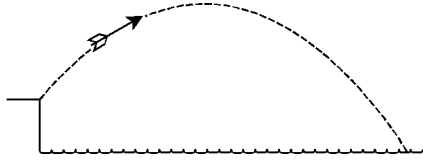
$$133. \text{Solve: } |2x - 3| + |x + 7| = 11$$

135. Luigi rides his bike to school, and forgets his lunch. 10 min after he leaves the house, his mother starts to drive after him in her car. The speed of the car is 22 mph. Luigi rides his bike at 12 mph. How long until the mother catches up?

137. A piece of artwork is originally sold for \$1000 and then resold four times. What is the price at the final sale if, at each resale, the price is 40% higher than the previous price?

139. A light filter reduces the intensity of light going through it by 35%. By what percent is the intensity of light reduced by 2 such filters, placed one on top of the other? By what percent is intensity reduced by 20 such filters?

140. An arrow is shot over a lake from a cliff that is 20 feet above a lake. The arrow returns to the same height as the cliff at a distance of 160 feet from the cliff. Its path traces a parabola and reaches a height of 60 feet above the lake.



- a) Find the equation which relates the height of the arrow above the lake to its horizontal distance from the cliff.
- b) What is the arrow's height above the water after it has travelled a horizontal distance of 40 feet?
- c) At what distance from the cliff will the arrow strike the lake?
142. The sum of the 2nd and 5th terms of a geometric sequence is 13. The sum of the 3rd and 6th is -39 . Determine the ratio r of the sequence and the first term a .
144. What is the equation of the parabola that contains the points $(0, -7)$, $(2, 1)$, and $(-3, 26)$?
146. The height h of a stone thrown straight up with a velocity of 14 m/sec is given by the relation $h = -3t^2 + 14t$. How long will it take for the stone to reach its maximum height?

141. A rectangular garden of area 20m^2 is to be surrounded by a grass border 1.5 m wide. The area of the grass and garden together is 70m^2 . Use a system of two equations in two variables to find the dimensions of the garden. If the variables are used

- 1) w equals the width of the garden
- 2) ℓ equals the length of the garden
- 3) Then which of the following systems of equations could be used to find the solution to the problem.

- a) $\ell \times w = 20$
 $(\ell + 1.5)(w + 1.5) = 70$
- b) $\ell \times w = 20$
 $(\ell \times w) - 2.25 = 70$
- c) $\ell \times w = 20$
 $(\ell - 1.5)(w - 1.5) = 70$
- d) $\ell \times w = 20$
 $(\ell + 1.5)(w - 1.5) = 70$
- e) $\ell \times w = 20$
 $(\ell + 3)(w + 3) = 70$

143. If $(-3, 7)$ is the minimum of $y = 2x^2 + 3ax + k$ then what is the value of a ?
145. Put the following in the form $a(x - h)^2 + k$:
- a) $y = 2x^2 - 24x + 69$
 - b) $y = -x^2 + 6x - 8$
 - c) $y = 3x^2 - 3x + \frac{23}{4}$
147. Show that if $(A, 0)$ and $(B, 0)$ lie on the graph of $y = a(x - h)^2 + k$ then $\frac{A + B}{2} = h$.

Answer List

- | | | |
|--|---|---|
| 1. arithmetic $d = 2$ | 2. geometric $r = 7$ | 3. neither |
| 4. arithmetic $d = -1.5$ | 5. geometric $r = \sqrt{2}$ | 6. 7.2 |
| 7. 26 | 8. no sum | 9. $-7.8, -7.2, -6.6$ |
| 10. -40 | 11. $-\frac{4}{5}$ | 12. 22 |
| 13. 21 | 14. -3390 | 15. 1591 |
| 16. 1935 | 17. 139, 3290 | 18. $-6, 18, -54$ |
| 19. $r = -\frac{1}{4}; -\frac{3}{16}, \frac{3}{64}$ | 20. $\frac{25}{512}$ | 21. $3, \pm 6$ |
| 22. 3.6 | 23. $7\frac{15}{16}$ | 24. -129 |
| 25. $18 + 36\sqrt{2}$ | 26. 58.33 | 27. 54 |
| 28. 44 | 29. 18; 984 | 30. $\frac{38}{11}, \frac{15}{4}$ |
| 31. $\frac{3}{5}$ | 32. $\frac{4}{3}$ | 33. 0.5299 |
| 34. 1.000 | 35. 0.4226 | 36. 0.9063 |
| 37. 46° | 38. 35° | 39. 4 |
| 40. 37.9° | 41. $\frac{1}{2}$ | 42. $\frac{\sqrt{3}}{2}$ |
| 43. $\frac{\sqrt{2}}{2}$ | 44. $\frac{\sqrt{3}}{2}$ | 45. $\sqrt{3}$ |
| 46. $\sqrt{3}$ | 47. $\approx 86^\circ$ | 48. $\frac{3}{4}$ |
| 49. 46.0° | 50. $\angle B = 49.0^\circ, a \approx 10.9 \text{ cm},$
$c \approx 16.6 \text{ cm}$ | 51. $a = 7, b = 7\sqrt{3}, c = 7\sqrt{6},$
$d = 7\sqrt{3}$ |
| 52. $a = 16\sqrt{2}, b = 8\sqrt{2}, r = 16\sqrt{2},$
$s = 32$ | 53. $\gamma = 52^\circ, c = 37.3, a = 39.2$ | 54. $c = 27\sqrt{3}, \alpha = 90^\circ, \gamma = 60^\circ$ |
| 55. $c = 10.18, \beta = 77.2^\circ, \gamma = 55.8^\circ$
or $c = 6.19, \beta = 102.8^\circ,$
$\gamma = 30.2^\circ$ | 56. $b = 17.3, \alpha = 14.5^\circ, \gamma = 24.5^\circ$ | 57. $\alpha = 52.5^\circ, \beta = 97.5^\circ, c = 2.5$ |
| 58. 49.43 km | 59. $\pm 4\sqrt{6}$ | 60. $\frac{-5 \pm \sqrt{105}}{8}$ |
| 61. $y = x^2 - 4 $ | 62. $y = -\frac{1}{3}(x + 1)^2 + 3$ | 63. $y = -3(x - 2)^2 + 4$ |
| 64. $y = (x - 2)^2 - 1$ | 65. $(\pm 2, 0)$ | 66. $(-1, \pm\sqrt{3})$ |
| 67. $(\pm\sqrt{11}, -5)$ | 68. $(-3, -5), (3, 5), \left(\frac{5\sqrt{2}}{2}, 3\sqrt{2}\right),$
$\left(-\frac{5\sqrt{2}}{2}, -3\sqrt{2}\right)$ | 69. $(3, 9), (-1, 1)$ |
| 70. $(-2, 8), \left(\frac{11}{4}, \frac{89}{4}\right)$ | 71. $(1, 3), (-1, -1)$ | 72. $\left(\frac{3}{2}, 2\right), (-1, -3)$ |
| 73. | 74. | 75. |
| 76. -10 | 77. $y \leq 5$ | 78. [graph] |
| 79. $y = \frac{1}{250}x^2$ or $y = \frac{1}{250}x^2 + 10$ | 80. about $11.2 \times 3.4 \text{ m}$ | 81. $(-9, 3)$ |
| 82. $\approx 3.5 \text{ m}$ | 83. $2a$ | 84. $\frac{-4ab^2}{7}$ |
| 85. $\frac{-5xz}{2y^2}$ | 86. $2mn^2$ | 87. $-150\sqrt{6}$ |

88. $60\sqrt{10}$
 89. $-4a^4$
 90. $33d^3c^3\sqrt{2c}$
 91. $10c^3d^2\sqrt{11d}$
 92. $3\sqrt{a^2-4}$
 93. $\frac{8\sqrt{55}}{15}$
 94. $\frac{\sqrt{30}}{15}$
 95. -1
 96. $\frac{\sqrt{15n}}{3}$
 97. $\frac{e^3f^5\sqrt{3f}}{2}$
 98. $\frac{\sqrt{xy}}{xy}$
 99. -6
 100. $20\sqrt{5}$
 101. $7e + 8e\sqrt{e}$
 102. $-11cd\sqrt{3c}$
 103. $-12y^2\sqrt[5]{2y}$
 104. $\pm 6\sqrt{3}$
 105. $\frac{13}{2}$
 106. 2
 107. 0
 108. 7
 109. $-6, 1$
 110. $-\frac{4}{x+3}$
 111. $\frac{2x+3}{x+5}$
 112. $\frac{3x+1}{2x^2+1}$
 113. $\frac{k+3n}{k+15n}$
 114. $\frac{1-a^2}{3}$
 115. $\frac{3u+4}{8u-3}$
 116. $\frac{x-4}{x+2}$
 117. $w + 3$
 118. $\frac{n+1}{n+4}$
 119. $\frac{2(a-2)}{a+5}$
 120. $(y+3)(y-1)$
 121. $-\frac{12}{5}$
 122. $0, \frac{17}{4}$
 123. ± 3
 124. 5
 125. $\frac{-16}{3}$
 126. $\frac{-17}{4}$
 127. -3
 128. $\frac{-25}{8}$
 129. $-1, \frac{7}{2}$
 130. $36, -72$
 131. \emptyset
 132. $-1, 5$
 133. $-1, \frac{7}{3}$
 134. $\frac{2}{7}$
 135. $\frac{1}{5}$ hour
 136. $18; 984$
 137. $\$3841.60$
 138. $\$1500; \$11,390$
 139. $57.75\%, 99.98\%$
 140. $y - 40 = -\frac{1}{160}(x - 80)^2; 50 \text{ ft}; \approx 178.0 \text{ ft}$
 141. e
 142. $r = -3, a = \frac{1}{6}$
 143. 4
 144. $y = 3x^2 - 2x - 7$
 145. $y = 2(x - 6)^2 - 3;$
 $y = -(x - 3)^2 + 1;$
 $y = 3(x - \frac{1}{2})^2 + 5$
 146. $\frac{7}{3}$ seconds
 147. [proof]

Catalog List

- | | | |
|---------------|---------------|---------------|
| 1. TRI LE 1 | 2. TRI LE 7 | 3. TRI LE 19 |
| 4. TRI LE 13 | 5. TRI LE 49 | 6. TRI LK 1 |
| 7. TRI LK 89 | 8. TRI LK 27 | 9. TRI LF 4 |
| 10. TRI LF 21 | 11. TRI LF 46 | 12. TRI LF 59 |
| 13. TRI LF 69 | 14. TRI LG 7 | 15. TRI LG 23 |
| 16. TRI LG 31 | 17. TRI LG 49 | 18. TRI LH 1 |
| 19. TRI LH 7 | 20. TRI LH 25 | 21. TRI LH 53 |
| 22. TRI LH 79 | 23. TRI LI 1 | 24. TRI LI 17 |
| 25. TRI LI 39 | 26. AW3 BI 11 | 27. TRI LC 2 |
| 28. TRI LC 18 | 29. TRI LN 1 | 30. CM1 QD 81 |
| 31. TRI MB 2 | 32. TRI MB 12 | 33. TRI MC 1 |
| 34. TRI MC 21 | 35. TRI MC 61 | 36. TRI MC 62 |
| 37. TRI ME 15 | 38. TRI ME 21 | 39. TRI MF 1 |
| 40. TRI MG 25 | 41. TRI MH 1 | 42. TRI MH 2 |
| 43. TRI MH 3 | 44. TRI MH 4 | 45. TRI MI 1 |
| 46. TRI MI 34 | 47. TRI ML 15 | 48. TRI MK 7 |
| 49. TRI ML 3 | 50. TRI MJ 4 | 51. TRI OH 53 |
| 52. TRI OH 56 | 53. TRI QF 1 | 54. TRI QF 17 |
| 55. TRI QF 45 | 56. TRI QG 15 | 57. TRI QG 33 |