

PRE CALCULUS 11  
PRACTICE FINAL EXAM

1. Simplify:  $\frac{10}{\sqrt{5}} - \frac{6}{\sqrt{5}-2}$  1.

2. Simplify:  $\frac{4\sqrt{7} + 3\sqrt{2}}{5\sqrt{2} + 2\sqrt{7}}$  2.

3. Simplify the following complex fraction: 3.

$$\frac{1 - \frac{1}{x^2}}{2 + \frac{1}{x} - \frac{1}{x^2}}$$

4. Simplify:  $\frac{2x^2 - x - 6}{2x^2 + 3x - 2} \div \frac{x^2 - 9}{x^2 - x - 6} \times \frac{4x^2 - 4x + 1}{2x^2 - 5x + 2}$  4.

5.  $\frac{a+3}{a^2 - a - 6} + \frac{a+3}{a^2 - 5a + 6}$  5.

6.  $\frac{9}{np} - \frac{4}{n^2}$

6.

7. Graph  $y = -x^2 - 6x + 2$ . Label 3 integral points. State the  
a.) vertex b.) x and y intercepts and c.) domain and range.

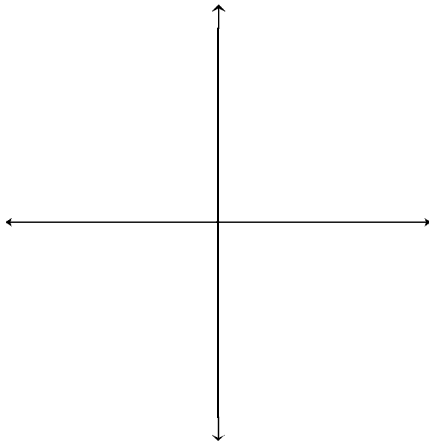
7. V: \_\_\_\_\_

Xint: \_\_\_\_\_

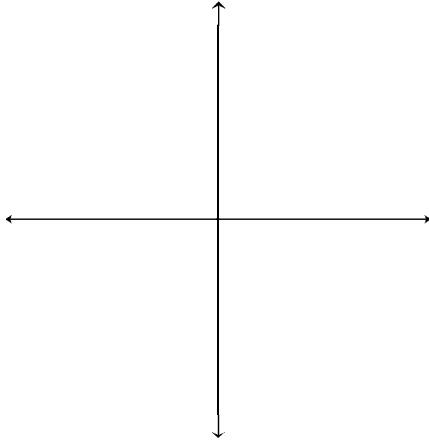
Yint: \_\_\_\_\_

D: \_\_\_\_\_

R: \_\_\_\_\_

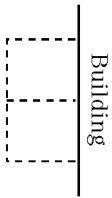


8. Graph  $y = 3x^2 + 24x + 1$ . Label 3 integral points. State the  
 a.) vertex b.) x and y intercepts and c.) domain and range.



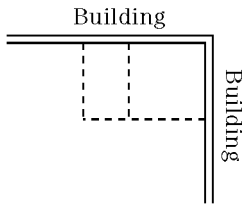
8. V: \_\_\_\_\_  
 Xint: \_\_\_\_\_  
 Yint: \_\_\_\_\_  
 D: \_\_\_\_\_  
 R: \_\_\_\_\_

9. A piece of land is to be fenced and then divided by an inner fence as shown in the diagram. A building forms one side of the total fenced area. If the total length of fencing available for both the outer fencing and the partition down the middle is 36 m, what is the maximum area that can be enclosed by the fencing?



9.

10. A fenced area is built next to a building as shown. Part of the fencing is used to make a partition inside the fenced area as shown. If the total length of fencing used is 36 metres, what is the maximum area that can be enclosed? 10.



11. Solve  $\frac{2x+1}{x^2-2x-15} = \frac{3x-1}{x^2+x-6} + \frac{4}{x^2-7x+10}$  11.

12. Solve  $\frac{2}{x^2-1} + \frac{3x+6}{x^2-x-2} = \frac{8}{x^2-3x+2}$  12.

13. Suppose that you drop a ball from a window 45 metres above the ground. The ball bounces to 65% of its previous height with each bounce. Find the total number of metres the ball travels between the time it is dropped and the 8th bounce. 13.

14. An object falls 9 m in the first second, another 27 m in the second second, and then 108 m more in the third second. If this pattern continues, how far will the object fall during the first 5 seconds? 14.

Given  $\triangle ABC$  with sides  $a$ ,  $b$ , and  $c$ , and opposite angles  $\alpha$ ,  $\beta$ , and  $\gamma$ , solve the triangle.

15.  $b = 7$ ,  $c = 11$ ,  $\beta = 27.8^\circ$  15.

16.  $a = 52.1$ ,  $b = 67.7$ ,  $\alpha = 41^\circ 10'$  16.

Graph.

17.  $y - 2 < (x - 5)^2$  17.

18.  $x + 2 > y$   
 $y + 1 > x^2$  18.

19.  $3(y - 5) > (x + 2)^2$  19.  
 $y \leq \frac{x}{3} + 7$

20. Solve  $2 \cos^2 \theta - 3 \cos \theta + 1 = 0$  if  $0 \leq \theta < 360^\circ$ . 20.

21. Solve  $3 \tan^2 \theta - 1 = 0$  for  $0 \leq \theta < 180^\circ$ . 21.

22. Find an EXACT VALUE for the following expression: 22.  
 $\cos 210^\circ \cdot \sin 240^\circ + \sec 150^\circ \cdot \csc 330^\circ$

23. Find an EXACT VALUE for the following expression: 23.  
 $\tan 120^\circ - \cot 240^\circ + \tan 315^\circ - \cot 225^\circ$

**Answer List**

- |  |                                      |  |
|--|--------------------------------------|--|
| 1. $-4\sqrt{5} - 12$   | 2. $\frac{-13 + 7\sqrt{14}}{11}$     | 3. $\frac{x - 1}{2x - 1}$  |
| 4. $\frac{2x + 3}{x + 3}$  | 5. $\frac{2a(a+3)}{(a-2)(a-3)(a+2)}$ | 6. $\frac{9n-4p}{n^2p}$  |
| 7. $\frac{9n-4p}{n^2p}$  | 8. $\frac{9n-4p}{n^2p}$              | 9. $108\text{m}^2$   |
| 10. $162\text{m}^2$  | 11. $\frac{9 \pm \sqrt{5}}{2}$       | 12. $-2, 3$  |
| 13. $203.9$  | 14. $1089$                           | 15. $a=4.97, \alpha=19.33^\circ, \gamma=132.87^\circ$<br>or $a = 14.5, \alpha = 105.07^\circ,$<br>$\gamma = 47.13^\circ$ |
| 16. $c = 77.95, \beta = 58^\circ 48', \gamma = 80^\circ 2'$<br>or $c = 23.98, \beta = 121^\circ 12',$<br>$\gamma = 17^\circ 38'$ | 17.                                  | 18.  |
| 19.  | 20. $0^\circ, 60^\circ, 300^\circ$   | 21. $30^\circ, 150^\circ$  |
| 22.  | 23.                                  |  |

**Catalog List**

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|---------------|---------------|---------------|
| 1. CM1 BD 21  | 2. CM1 BD 19  | 3. CM1 AE 71  |
| 4. CM1 AE 69  | 5. ALG LI 113 | 6. ALG LI 11  |
| 7.            | 8.            | 9. CM1 FE 24  |
| 10. CM1 FE 22 | 11. AW2 DF 48 | 12. AW2 DF 46 |
| 13. CM1 QH 60 | 14. CM1 QH 58 | 15. TRI QF 58 |
| 16. TRI QF 56 | 17. TRI JJ 11 | 18. TRI JJ 21 |
| 19. TRI JJ 23 | 20. CM1 GD 21 | 21. CM1 GD 15 |
| 22.           | 23.           |               |