

MATH 110 Test 5 (8.1-8.3, 9.1, 9.2, 9.4, 10.1, 10.2)

Show all your work. No work no credit

1. (1 each) Find each root that is a real number.

a) $-\sqrt{0.01}$

b) $\sqrt[3]{-8}$

c) $\sqrt[4]{1}$

d) $\sqrt[5]{3^5}$

e) $\sqrt{-25}$

f) $\sqrt{(-3)(-27)}$

2. (3 each) Graph each equation:

a) $2x - y = 9$

b) $y = 5 - 2x$

[natheight=4.0154cm, natwidth=4.0154cm, height=4.0154cm, width=4.0154cm]

C:/swp55/temp/graphics/swp0001₁.pdf

[natheight = 4.0154cm, natwidth =

4.0154cm, height = 4.0154cm, width = 4.0154cm]C : /swp55/temp/graphics/swp0001₂.pdf

c) $x - 2 = -5$

d) $y + 3 = 0$

[natheight=4.0154cm, natwidth=4.0154cm, height=4.0154cm, width=4.0154cm]

C:/swp55/temp/graphics/swp0001₃.pdf

[natheight = 4.0154cm, natwidth =

4.0154cm, height = 4.0154cm, width = 4.0154cm]C : /swp55/temp/graphics/swp0001₄.pdf

3. (2 each) Simplify. Use absolute value when necessary.

a) $\sqrt{216}$

b) $\sqrt{12ab^2c^3}$

c) $\sqrt[3]{729a^4b^8}$

d) $\sqrt[4]{32x^4y^{16}}$

4. (4 pts) Find the length of the missing side.

5. (4 pts.) Find the distance between the points $P(5, -2)$ and $Q(7, -5)$.

6. (4 pts) If $M(2, 4.5)$ is the midpoint of the segment PQ and the coordinates of P are $(1, 7)$, find the coordinates of Q .

7. (4 pts) Tell whether the graphs of the pair of equations are parallel, perpendicular, or neither. $2x = 3y + 4$, $y = \frac{-3}{2}x + 7$

8. (3 pts) The height of a triangle is 5 centimeters longer than three times its base. Find the base of the triangle if its area is 6 square centimeters.

9. (4 pts) Find the slope of the line through the points $(-6, 3)$ and $(1, 2)$.

10. (3 each) Simplify and combine like radicals. Assume all variables represent positive numbers.

a) $6\sqrt{11} + 4\sqrt{11} - 3\sqrt{11}$

b) $\sqrt{32x} + 7\sqrt{12x} + \sqrt{98x}$

11. (4 pts) Tell whether the line PQ , where $P(3, 4)$ and $Q(-3, -5)$, is parallel or perpendicular (or neither) to a line with slope 5.

12. (4 pts) find the **midpoint** of the line segment through the two points $P(-2, 6)$ and $Q(5, 0)$

13. (5 pts) Write the equation of a line, in general form, that passes through the point $P(2, 2)$, and **perpendicular** to the line whose equation is $y = \frac{-4}{3}x + 4$.

14. (4 each) Solve by **Factoring**:

a) $y^2 - 169 = 0$

b) $x^2 - 3x - 4 = 0$

15. (4 each) Solve by the **Square Root** method:

a) $x^2 = 12$

b) $(x - 1)^2 = 13$

16. (4 each) Solve by **Completing the Square**:

a) $x^2 - 10x + 3 = 0$

b) $3y^2 + 9y = -9$

17. (4 each) Solve by the **Quadratic Formula**:

a) $x^2 + 2x - 4 = 0$

b) $4x^2 + x - 4 = 0$

18. **BONUS** (5 pts.) Find a third degree equation that has the following solutions: $\{-\sqrt{7}, \sqrt{7}, 2\}$