

SHOW ALL WORK! THIS WILL BE GRADED FOR ACCURACY
(5 pts each answer, unless otherwise indicated)

1. Write the equation of a line through (2, 2) and with both x intercept of (a, 0) and y-intercept of (0, b). (a ≠ 0, b ≠ 0). Make sure to find the y-int. containing a. **Do not just write b!**(6 pts.)

$$2. f(x) = \begin{cases} 2x^3 + 5 & \text{if } x \leq 1 \\ 3x^2 + 1 & \text{if } x > 1 \end{cases}$$

a) Find $f(-4)$ _____

b) Find $f(1)$ _____

c) Find $f(b^2 + 3)$ _____

3. If $a + b = 2$, and $a^2 - b^2 = -9$, then find $b - a$. Show your work!

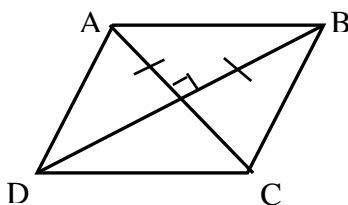
4. If you cut the largest possible circle from a square 6 inches by 6 inches, how much scrap material will there be? (6 pts)

5. You are going to build a pool with a deck of uniform width around it. The dimensions of the pool and surrounding deck will be 20 feet by 30 feet. If the volume of the water is to be 2295 cubic feet and the pool has a uniform depth of 5 feet, how wide will the deck need to be? (6 pts)

Make sure you show your equation.

Width _____

6. If the area of parallelogram ABCD is $16r^2 - 56r + 49$ then find the length of AB. (6 pts)



7. If the volume of a rectangular solid is 288 cubic units. The width is twice the height and the length is 7 units more than the height. Find the dimensions of the solid to the nearest hundredths. (6 pts)

Length = _____ Width = _____ Height = _____

Solve by factoring.

8. $2x^3 - x^2 - 18x = -9$

9. $(x + 1)^2 + 2(x - 2) = (x + 1)(x - 2)$

10. $2x^3 - 3x^2 - 32x > -48$ (Use Interval Notation for this)

11. $y = \frac{x - 1}{x^2 - 5x + 4}$

12. $y = \frac{2x^2 - 1}{3x^2 - 4}$ (2 pts. per blank)

Hole _____ y- int _____

Hole _____ y- int _____

V. A. _____ x - int _____

V. A. _____ x - int _____

H. A. _____

H. A. _____

13. Find k such that $(x - 2)$ is a factor of the polynomial $f(x) = k^2x^2 - 3kx - 4$.

14. Set up a chart for Descartes. Find all of the zeros of $y = 2x^4 + 7x^3 - 26x^2 + 23x - 6$. (10 pts. total)

Positive	Negative	Imaginary

Zeros _____ (6 pts.)