

H. PRECALCULUS

Algebra II Review

Name: _____

Period: _____ Date: _____

Linear Algebra:

1. What is the solution of $|2x - 1| < 5$? Graph.

Quadratics:

2. Looking at an equation in vertex form, identify the vertex. What is the domain and range?

$$y = \frac{1}{2}(x + 6)^2 - 8$$

3. Identify the a, b, and c values in an equation in standard form. Calculate the vertex.

$$y = 3x^2 - 7x + 20$$

4. If we have an equation in standard form, can you convert to vertex form? Take the following equation to vertex form: $y = 4x^2 - 2x + 9$

5. What are the vertex, axis of symmetry, maximum or minimum value, and range of $y = -3x^2 - 4x + 6$?
6. The equation for the cost in dollars of producing computer chips is given by the equation $C = 0.000015x^2 - 0.03x + 35$, where x is the number of chips produced. Find the numbers of chips that minimizes the cost. What is the cost for that number of chips?

Exponentials and Logarithms:

7. Suppose you won a contest at the start of 5th grade that deposited \$3000 in an account that pays 5% annual interest compounded continuously. How much will you have in the account when you enter high school 4 years later? How much when you graduate? Express the answer to the nearest dollar.

8. What is the logarithmic form of each equation?

A) $100 = 10^2$

B) $81 = 3^4$

9. What is the value of $\log_8 32$?

10. Write each expression as a single logarithm:

a) $\log_4 32 - \log_4 2$

b) $6\log_2 x + 5\log_2 y$

Polynomials:

11. Simplify each rational expression. State restrictions on x.

a) $\frac{4x^2 - 2x}{x^2 + 5x + 4} \div \frac{2x}{x^2 + 2x + 1}$

b) $\frac{3x}{x^2 - 4} + \frac{6x}{x + 2}$

c) $\frac{\frac{1}{xy} - \frac{1}{y^2}}{\frac{1}{x^2y} - \frac{1}{xy^2}}$

12. Solve the equation: $\frac{10}{2x+8} - \frac{7x+8}{x^2-16} = \frac{-8}{2x-8}$

13. Solve. $\sqrt[3]{4x-3} + 2 = 0$

14. What are the real or imaginary solutions of each polynomial equation?

a) $x^3 = 8x - 2x^2$

b) $x(x^2 + 8) = 8(x + 1)$

Simplifying Expressions:

15. Rationalize the denominator and simplify. $\frac{5}{\sqrt{14}-\sqrt{2}}$

16. Multiply. (Write as a polynomial.) $[(x - 3) + y]^2$

17. Factor completely. $3x^2 - 5x + 2$

18. Factor completely. $8x^5 - 6x^2 + 12x^3 - 9$

19. Factor. $x^3 - 8$

Trigonometry:

20. $\sin 90^\circ$

25. convert 180 degrees to radians

21. $\cos 60^\circ$

26. convert $\frac{\pi}{6}$ to degrees

22. $\sin 30^\circ$

23. $\cos 90^\circ$

24. $\tan 45^\circ$