

Exam ReviewName Key Hr. _____

Show ALL work!

Unit 2

- 1) Determine whether the function below has a maximum or a minimum value and find that value.

$$f(x) = 4x^2 - 16x + 6$$

Minimum -10

- 2) Consider the equation $y = -(x - 6)^2 - 5$. Identify the following:

a) Vertex: (6, -5)

b) Axis of Symmetry: x = 6

c) Direction of Opening: down

Unit 3

- 3) Solve the equation below by **Factoring**.

$$3x^2 - x = 4$$

$$\left\{ \frac{4}{3}, -1 \right\}$$

- 4) Write a quadratic equation with -4 and $\frac{3}{2}$ as its roots.

Write the equation in the form $ax^2 + bx + c = 0$, where a , b , and c are integers.

$$y = 2x^2 + 5x - 12$$

5) Solve the equation below by using the **Quadratic Formula**. Find the *exact* solutions.

$$2x^2 = 9x - 5$$

$$\frac{9 \pm \sqrt{41}}{4}$$

For Questions 6 and 7,

- a) Find the value of the discriminant for each quadratic equation.
 b) Describe the number of roots for the equation.
 c) Describe the type of roots for the equation.

6) $25x^2 - 20x + 4 = 0$

a. 0

b. 1

c. real rational

7) $2x^2 + 10x + 9 = 2x$

a. -8

b. 2

c. complex

Unit 4

For Questions 8-17, simplify completely.

8. $\frac{32a^5b^{-6}}{20a^{-3}b^{-4}}$

$$\frac{8a^8}{5b^2}$$

9. $(4c^2 - 12c + 7) - (c^2 + 2c - 5)$

$$3c^2 - 14c + 12$$

10. $(9p^2 + 7p) + (5p^2 - 4p - 12)$

$$14p^2 + 3p - 12$$

11. $(3x + 4)(2x - 5)$

$$6x^2 - 7x - 20$$

Algebra 2A

12. $(x^3 + 4x^2 - 17x - 50) \div (x + 3)$

$$x^2 + x - 20 + \frac{10}{x+3}$$

13. $\sqrt{81x^9y^4}$

$$9x^4y^2\sqrt{x}$$

14. $\sqrt[3]{24a^6b^5}$

$$2a^2b\sqrt[3]{3b^2}$$

15. $2\sqrt{50} + \sqrt{45} - \sqrt{18}$

$$7\sqrt{2} + 3\sqrt{5}$$

16. $(7 + 6i) + (-3 + 2i)$

$$4 + 8i$$

17. $(5 + 3i)(6 - i)$

$$33 + 13i$$

For Questions 18-23, factor completely.

18. $x^2 - 3x - 40$

$$(x-8)(x+5)$$

19. $2y^2 + 15y + 18$

$$(2y+3)(y+6)$$

20. $9d^2 - 9$

$$9(d+1)(d-1)$$

21. $n^2 - 12n + 20$

$$(n-10)(n-2)$$

22. $3a^3 + 12a^2 - 63a$

$$3a(a+7)(a-3)$$

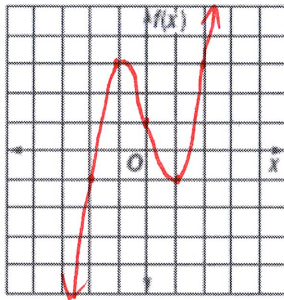
23. $\frac{2x^2 + 3x - 9}{x^2 - x - 12}$

$$\frac{2x-3}{x-4}$$

Unit 5

24) Graph $f(x) = x^3 - 3x + 1$ by making a table of values:

X	Y
-3	-17
-2	-1
-1	3
0	1
1	-1
2	3
3	19



a) Describe the end behavior of the graph.

$$\lim_{x \rightarrow -\infty} f(x) = -\infty \qquad \lim_{x \rightarrow +\infty} f(x) = +\infty$$

b) Approximate the value of each real zero using a graphing calculator.

$$\{-1.88, .35, 1.53\}$$

c) Approximate the x -coordinates at which the relative maxima occur.

$$-1$$

d) Approximate the x -coordinates at which the relative minima occur.

$$1$$

Algebra 2A

25) Find $(f \circ g)(x)$ for $f(x) = x^2 + 4$ and $g(x) = x + 7$.

$$x^2 + 14x + 53$$

26) Find $p(-3)$ if $p(x) = x^2 + 4x - 5$.

$$-8$$

27) Solve $x^4 - 9x^2 + 20 = 0$

$$\{\pm\sqrt{5}, \pm 2\}$$

28) Find the inverse of $f(x) = 4x - 12$.

$$f^{-1}(x) = \frac{1}{4}x + 3$$

29) Find $(f - g)(x)$ for $f(x) = -3x^2 + 7$ and $g(x) = x^2 - 4x$.

$$-4x^2 + 4x + 7$$

30) Find $(f + g)(x)$ for $f(x) = 4x^2 + 9x$ and $g(x) = 2x^2 - x + 6$.

$$6x^2 + 8x + 6$$

Unit 6

For Questions 31 and 32, write the given equation in logarithmic form.

31) $4^{-3} = \frac{1}{64}$

$$\log_4 \frac{1}{64} = -3$$

32) $e^x = 10$

$$\ln 10 = x$$

For Questions 33 and 34, write the given equation in exponential form.

33) $\log_{25} 5 = \frac{1}{2}$

$$25^{\frac{1}{2}} = 5$$

34) $\ln x \approx 2.3026$

$$e^{2.3026} \approx x$$

For Questions 35-38, solve the equation. If necessary, round to four decimal places.

35) $\log_8 b = 2$

$$64$$

36) $\log_x 7 = 1$

$$7$$

37) $\log_3 x = 2 \log_3 3 + \log_3 5$

$$45$$

38) $\log_6 12 = \log_6 x - \log_6 3$

$$36$$

Unit 7

For Questions 39 and 40, determine whether the equation represents exponential growth or decay.

39) $y = \frac{3}{4} \left(\frac{7}{6} \right)^x$

Growth

40) $y = \frac{5}{6} \left(\frac{1}{2} \right)^x$

Decay

Algebra 2A

- 41) The Jacksons bought a house for \$149,400 in 1993. Houses in the neighborhood have appreciated at the rate of 2.9% per year. How much is the house worth in 2013?

$$\approx \$264,642$$

- 42) In a particular state, the population of black bears has been decreasing at a rate of 0.75% per year. In 1990, it was estimated that there were 400 black bears in the state. If the population continues to decline at the same rate, what will the population be in 2014?

$$\approx 333 \text{ black bears}$$

- 43) If \$3,000 is invested at an annual interest rate of 5% compounded continuously, what is the amount in the account after 8 years? Round your answer to the nearest penny.

$$\approx \$4475.47$$

44) $2^x = 15$

$$3.9069$$

45) $7^{2x} = 35$

$$.9135$$

46) $25e^x = 1000$

$$3.6889$$

47) $\ln 7x = 10$

$$3146.6380$$

- 48) Express $\log_3 21$ in terms of common logarithms.

A. $\frac{\log 3}{\log 21}$

B. $\log 63$

C. $\frac{\log 21}{\log 3}$

D. $\log\left(\frac{21}{3}\right)$