

PRE-CALCULUS 11
TERM 2 EXAM
REVIEW

I. Things to Know

1. Radicals
2. Quadratic Equations
3. Quadratic Functions
4. Inequalities & Systems of Equations

II. Radicals

A. Simplify the following.

1) $\sqrt{125}$

2) $\sqrt[4]{96}$

3) $\sqrt{81} + \sqrt{50} - \sqrt{121} + \sqrt{98}$

4) $\sqrt[3]{24} - \sqrt[3]{81}$

5) $(-3\sqrt{6})(2\sqrt{2})$

6) $(3\sqrt{3} - \sqrt{8})^2$

B. Rationalize the denominator.

7) $\frac{\sqrt{2}}{\sqrt{3}}$

8) $\frac{\sqrt{8} + \sqrt{6}}{\sqrt{6} - \sqrt{2}}$

C. Solve and check the following radical equations.

9) $2\sqrt{2x+4} + 12 = 4, x \geq -2$

10) $\sqrt{-3x+7} = \sqrt{-2x+9} \quad x \geq \frac{7}{3} \text{ or } x \geq \frac{9}{2}$

III. Solving Quadratic Equations

A. Factor the following completely.

11) $75a^2b - 48b^3$

12) $18m^3 + 12m^2 + 2m$

13) Solving the quadratic equation $x^2 = -\frac{7}{2}x - 3$, by Factoring Method.

14) Solve the quadratic equation $2x^2 - 10x - 20 = 4x^2 + 6x$, by Completing the Square.

15) Solve the quadratic formula $x^2 + 4x - 1 = 0$, using the Quadratic Formula.

B. Determine the value of the discriminant and where there are one, two or no real roots.

16) $4x^2 - 5x + 3 = 0$

17) $4x^2 + 8x + 4 = 0$

IV. Quadratic Functions

A. Find the coordinates of the x and y-intercepts for the following quadratic functions.

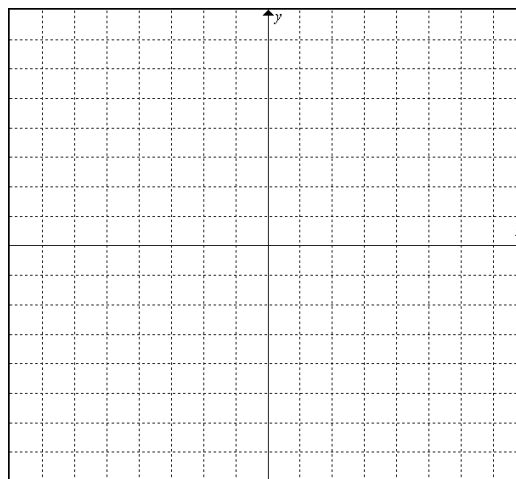
18) $y = (3x - 1)(2x + 3)$

19) $y = 3x^2 + 18x - 21$

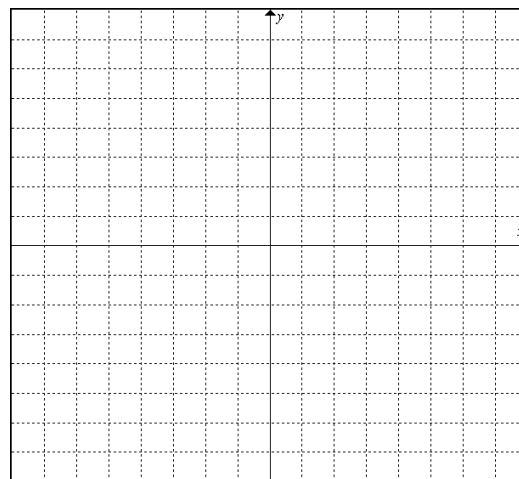
20) Write the equation of a quadratic function in General Form $y = ax^2 + bx + c$ with roots of 4 and -1 and passing through the point (3,3).

21) Put the function $y = 3(x + 2)(x - 6)$ into Standard Form $y = a(x - p)^2 + q$.

- 22) Put the quadratic function $y = 2x^2 - 12x + 16$ into Factored Form $y = a(x - r_1)(x - r_2)$. Then graph the function, making sure to include the vertex, the coordinates of the x & y intercepts and at least one other point.



- 23) Put the quadratic function $y = -\frac{1}{2}x^2 - 2x - 1$ into Standard Form $y = a(x - p)^2 + q$, then identify the coordinates of the vertex, the axis of symmetry, graph the function and determine the domain and range of the function.



Assignment: Pg. 156 #3, 4, 5, 7, 8, 11
Pg. 162 #3, 4, 5
Pg. 242 #4, 6, 7, 8, 10
Pg. 332 #5, 6, 7, 8

Answers

Radicals

1) $5\sqrt{5}$

2) $2\sqrt[4]{6}$

3) $-2 + 12\sqrt{2}$

4) $-\sqrt[3]{3}$

5) $-12\sqrt{3}$

6) $35 - 12\sqrt{6}$

7) $\frac{\sqrt{6}}{3}$

8) $\frac{5 + 3\sqrt{3}}{2}$

9) No Solution

10) $x = -2$

Quadratic Equations

11) $3b(5a + 4b)(5a - 4b)$

12) $2m(3m + 1)^2$

13) $x = -\frac{3}{2}, -2$

14) $x = -4 \pm \sqrt{6}$

15) $x = -2 \pm \sqrt{5}$

16) No Real Roots

17) One Root

Quadratic Functions

18) x-int $\left(\frac{1}{3}, 0\right)$ & $\left(-\frac{3}{2}, 0\right)$

y-int $(0, -3)$

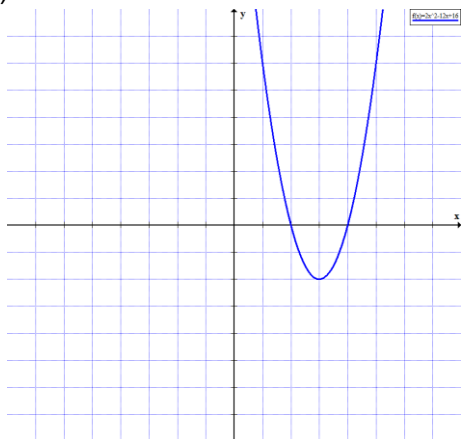
19) x-int $(-7, 0)$ & $(1, 0)$

y-int $(0, -21)$

20) $y = -\frac{3}{4}x^2 + \frac{9}{4}x + 3$

21) $y = 3(x - 2)^2 - 48$

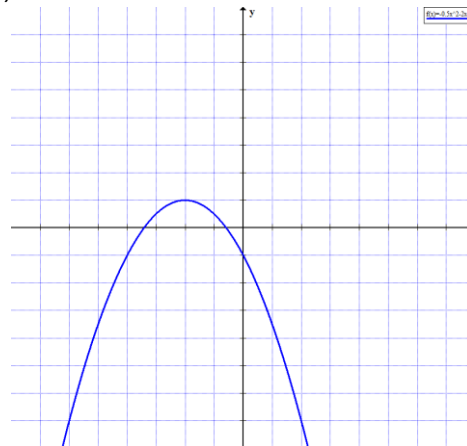
22)



$$y = 2(x - 4)(x - 2)$$

vertex $(3, -2)$ x-int $(4, 0)$ & $(2, 0)$ y-int $(0, 16)$ other point $(1, 6)$ or $(5, 6)$

23)



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

vertex $(-2, 1)$ Axis of Sym $x = -2$ Domain $x \in R$ Range $y \leq 1$