Mathematics 20-1
Chapter 4: Quadratic Equations
Final Exam Review Assignment

Name: Answers
Date: _____

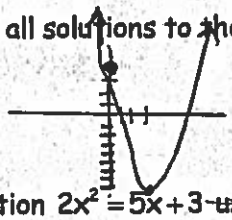
Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1. Solve $0.5x^2 - 3x = 4$ by graphing. Round all solutions to the nearest tenth.

$0.5x^2 - 3x - 4 = y$

vertex $\frac{3}{2(0.5)} = 3$

$0.5(3)^2 - 3(3) - 4 = -6.5$



2. Determine the exact roots to the equation $2x^2 = 5x + 3$ ~~using technology~~.

$2x^2 - 5x - 3 = 0$ . P -6, S -5, -6,1

$2x^2 - 6x + x - 3 = 0$

$2x(x-3) + (x-3) = 0$

$2x+1=0$ $\quad x-3=0$

$x = -\frac{1}{2}$ $\quad x = 3.$

3. Factor each of the following completely.

a) $(x+3)^2 + 2(x+3) - 24$ Let $m = x+3$

$m^2 + 2m - 24$ P -24, S 2, 6,-4

$= (m+6)(m-4)$

$= (x+3+6)(x+3-4)$

$= (x+9)(x-1)$

b) $2(4x-1)^2 + 9(4x-1) + 10$ Let $m = 4x-1$

$2m^2 + 9m + 10$ P 20, S 9, 4,5

$= 2m^2 + 4m + 5m + 10$

$= 2m(m+2) + 5(m+2)$

$= (2m+5)(m+2)$

$= (2(4x-1)+5)(4x-1+2)$

$= (8x-2+5)(4x+1)$

$= (8x+3)(4x+1)$

4. Solve each quadratic equation by factoring.

a) $2a^2 - 10a - 28 = 0$

$2(a^2 - 5a - 14) = 0$

$2(a-7)(a+2) = 0$

$a-7=0$ $\quad a+2=0$

$a = 7$ $\quad a = -2.$

b) $10b^2 + 13b = 3$

$10b^2 + 13b - 3 = 0.$ P -30, S 13, -15,2

$10b^2 - 15b + 2b - 3 = 0.$

$5b(2b-3) + 1(2b-3) = 0$

$(5b+1)(2b-3) = 0$

$5b+1=0$ $\quad 2b-3=0$

$b = -1/5$ $\quad b = 3/2.$

c) $16p^2 - 9 = 0$

$(4p-3)(4p+3) = 0$

$4p-3=0$ $\quad 4p+3=0$

$p = \frac{3}{4}$ $\quad p = \frac{-3}{4}.$

d) $6x^2 + 4 = 11x$

$6x^2 - 11x + 4 = 0$ P 24, S -11, -8,-3

$6x^2 - 8x - 3x + 4 = 0$

$2x(3x-4) - 1(3x-4) = 0$

$(2x-1)(3x-4) = 0$

$2x-1=0$ $\quad 3x-4=0$

$x = \frac{1}{2}$ $\quad x = \frac{4}{3}$

5. Use the quadratic formula to solve each quadratic equation. Express answers as exact values in simplest form.

a) $3x^2-6x+1=0$

$$x=\frac{6\pm\sqrt{(-6)^2-4(3)(1)}}{2(3)}$$

$$x=\frac{6\pm\sqrt{36-12}}{6}$$

$$x=\frac{6\pm\sqrt{24}}{6}$$

$$x=\frac{6\pm2\sqrt{6}}{6}$$

$$x=\frac{3\pm\sqrt{6}}{2}.$$

b) $4x^2=3-10x$

$$4x^2+10x-3=0.$$

$$x=\frac{-10\pm\sqrt{10^2-4(4)(-3)}}{2(4)}$$

$$x=\frac{-10\pm\sqrt{100+48}}{8}$$

$$x=\frac{-10\pm\sqrt{148}}{8}$$

$$x=\frac{-10\pm2\sqrt{37}}{8}$$

$$x=\frac{-5\pm\sqrt{37}}{4}.$$

6. Solve each of the following quadratic equations. Give solutions as exact values, in simplest form.

a) $16x^2-8x+1=0$

P 16
S -8
$-4, -4$

$16x^2-4x-4x+1=0$

$4x(4x-1)-1(4x-1)=0$

$(4x-1)(4x-1)=0$

$4x-1=0 \quad 4x-1=0$

$x=\frac{1}{4} \quad x=\frac{1}{4}.$

b) $2x^2+1=6x$

$2x^2-6x+1=0$

$$x=\frac{6\pm\sqrt{(-6)^2-4(2)(1)}}{2(2)}$$

$$x=\frac{6\pm\sqrt{36-8}}{4}$$

$$x=\frac{6\pm\sqrt{28}}{4}$$

$$x=\frac{6\pm2\sqrt{7}}{4}$$

$$x=\frac{3\pm\sqrt{7}}{2}.$$