

Section 4.3 and 4.4 – Final Exam Prep

Answer the following four questions, show as many steps as you need to, write clearly and neatly.

1. Solve using the Square Root Method

$$\left(x + \frac{2}{3}\right)^2 = \frac{5}{9}$$

$$x + \frac{2}{3} = \pm \sqrt{\frac{5}{9}}$$

$$x = -\frac{2}{3} \pm \frac{\sqrt{5}}{3}$$

$$x = \frac{-2 \pm \sqrt{5}}{3}$$

2. Complete the square and then solve using the Square Root Method

$$(2x + 5)(x - 3) = (x + 4)(x - 1)$$

$$2x^2 - 6x + 5x - 15 = x^2 - x + 4x - 4$$

$$2x^2 - x - 15 = x^2 + 3x - 4$$

$$x^2 - 4x - 11 = 0$$

$$(x^2 - 4x) - 11$$

$$(x^2 - 4x + 4 - 4) - 11$$

$$(x^2 - 4x + 4) - 4 - 11$$

$$(x - 2)^2 - 15$$

$$\text{vertex: } (2, -15)$$

3. Solve using the Quadratic Equation:

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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

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

$$\frac{-2 \pm \sqrt{4 + 8}}{-4}$$

$$\frac{-2 \pm \sqrt{12}}{-4}$$

$$\frac{-2 \pm 2\sqrt{3}}{-4}$$

$$\frac{1 \pm \sqrt{3}}{2}$$

4. Solve using the Quadratic Equation

$$(x+2) \frac{6}{x} + \frac{4x}{x+2} = 1(x+2) \times$$

$$6(x+2) + 4x = x^2 + 2x$$

$$6x + 12 + 4x = x^2 + 2x \rightarrow 0 = x^2 - 8x - 12$$

$$\frac{8 \pm \sqrt{(-8)^2 - 4(1)(-12)}}{2}$$

$$\frac{8 \pm \sqrt{64 + 48}}{2}$$

$$\frac{8 \pm \sqrt{112}}{2}$$

$$\frac{8 \pm \sqrt{16} \sqrt{7}}{2}$$

$$\frac{8 \pm 4\sqrt{7}}{2}$$

$$4 \pm 2\sqrt{7}$$