Ch 7 Review Packet

13) $\frac{3x^2}{3} - \frac{2x}{3} + \frac{1}{3} = \frac{0}{3}$

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

Texas 2 Step: $\left(\frac{2}{3} \cdot \frac{1}{2}\right)^2$

$\left(\frac{2}{6}\right)^2 \rightarrow \left(\frac{1}{3}\right)^2$

$x^2 - \frac{2}{3}x + \frac{1}{9} = -\frac{1}{3} + \frac{1}{9}$

$\left(x - \frac{1}{3}\right)^2 = -\frac{2}{9}$

$\sqrt{\left(x - \frac{1}{3}\right)^2} = \sqrt{-\frac{2}{9}}$

$$\left|x-\frac{1}{3}\right| = \frac{i\sqrt{2}}{3}$$

$$x-\frac{1}{3} = \pm\frac{i\sqrt{2}}{3}$$

$$x = \frac{1}{3} \pm \frac{i\sqrt{2}}{3}$$

$$x = \frac{1 \pm i\sqrt{2}}{3}$$

10) $2x^2+5x+7=0$

b^2-4ac

$a=2 \quad b=5 \quad c=7$

$5^2-4(2)(7)$

$25-56 = -31$

2 complex roots

15) $x^4 + 2x^2 - 15 = 0$

$(x^2 + 5)(x^2 - 3) = 0$

$x^2 + 5 = 0$

$x^2 = -5$

$\sqrt{x^2} = \sqrt{-5}$

$|x| = i\sqrt{5}$

$x = \pm i\sqrt{5}$

$x^2 - 3 = 0$

$x^2 = 3$

$\sqrt{x^2} = \sqrt{3}$

$|x| = \sqrt{3}$

$x = \pm\sqrt{3}$

23) $2x' - 9\sqrt{x}' + 4 = 0$

$a = 2 \quad b = -9 \quad c = 4$

$$\sqrt{x} = \frac{9 \pm \sqrt{(-9)^2 - 4(2)(4)}}{2(2)}$$

$$\sqrt{x} = \frac{9 \pm \sqrt{81 - 32}}{4}$$

$$\sqrt{x} = \frac{9 \pm \sqrt{49}}{4}$$

$$\sqrt{x} = \frac{9+7}{4} \text{ or } \sqrt{x} = \frac{9-7}{4}$$

$\sqrt{x} = 4$ or $\sqrt{x} = \frac{1}{2}$

$(\sqrt{x})^2 = (4)^2$ or $(\sqrt{x})^2 = \left(\frac{1}{2}\right)^2$

$x = 16$ or $x = \frac{1}{4}$

Extraneous Roots

Check your answers

4) $f(x) = \frac{1}{2}x^2 + 2x + 5$

$y - 5 = \frac{1}{2}x^2 + 2x$

$y - 5 = \frac{1}{2}(1x^2 + 4x + 4)$

$+2$

$y - 3 = \frac{1}{2}(x+2)^2$

$y = \frac{1}{2}(x+2)^2 + 3$

up, ~~vertex~~ $(-2, 3)$

axis of sym: $x = -2$

11) $\frac{1+\sqrt{2}}{3}$, $\frac{1-\sqrt{2}}{3}$

sum: $\frac{2}{3}$

product: $\frac{1-2}{9} = \frac{-1}{9}$

$a(x^2 - \text{sum}\,x + \text{prod} = 0)$

$x^2 - \frac{2}{3}x + \frac{-1}{9} = 0$

$9\left[x^2 - \frac{2}{3}x - \frac{1}{9} = 0\right]$

$9x^2 - 6x - 1 = 0$

Find the zeros:

Page 336 # 30 part 'd'

Find the zeros

$$G(x) = 2x^2 + 8x + 5$$

replace G(x) with zero then solve

$$0 = 2x^2 + 8x + 5$$

$$a = 2 \quad b = 8 \quad c = 5$$

$$x = \frac{-8 \pm \sqrt{(-8)^2 - 4(2)(5)}}{2(2)}$$

$$x = \frac{-8 \pm \sqrt{64 - 40}}{4}$$

$$x = \frac{-8 \pm \sqrt{24}}{4} \rightarrow \frac{-8 \pm 2\sqrt{6}}{4}$$

$$x = \frac{2(-4 \pm \sqrt{6})}{2 \cdot 2} \rightarrow \frac{-4 \pm \sqrt{6}}{2}$$