MAT 012 Quiz 2 SOLUTIONS

1) $x^2 + 9x + 14 = 0$

$(x+2)(x+7) = 0$

$x+2=0$ or $x+7=0$

$-2\ -2$ $\quad$ $-7\ -7$

$\boxed{x = -2 \text{ or } x = -7}$

2) $4x^2 - 28x + 48 = 0$

$4(x^2 - 7x + 12) = 0$

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

$4 \neq 0$ $\quad x-3=0$ or $x-4=0$

$+3\ +3$ $\quad$ $+4\ +4$

$\boxed{x = 3 \text{ or } x = 4}$

3) $3x^2 + 11x - 4 = 0$

$\frac{(3x+12)(3x-1)}{3} = 0$

12

12 1

3 4

$\frac{3(x+4)(3x-1)}{3} = 0$

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

$x+4=0$ or $3x-1=0$

$-4\ -4$ $\quad$ $+1\ +1$

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

$\boxed{x = -4 \text{ or } x = \frac{1}{3}}$

4) $4x^3 + 22x^2 + 30x = 0$

$2x(2x^2 + 11x + 15) = 0$

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

$\frac{2x}{2} = \frac{0}{2}$ or $x+3=0$ or $2x+5=0$

$-3\ -3$ $\quad$ $-5\ -5$

$x = 0$ $\quad x = -3$ $\quad \frac{2x}{2} = \frac{-5}{2}$

$\boxed{x = 0 \text{ or } x = -3 \text{ or } x = -\frac{5}{2}}$

Factoring $2x^2 + 11x + 15$

$= \frac{(2x+6)(2x+5)}{2}$

$= \frac{2(x+3)(2x+5)}{2}$

$= (x+3)(2x+5)$