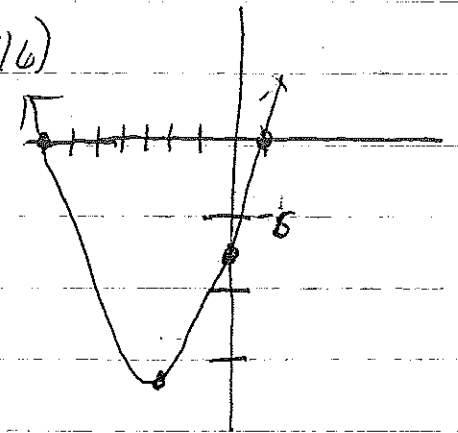


Unit 2 Review - Answers

2.1) Quadratics

① $y = x^2 + 6x - 7 = 0$
 $(x+7)(x-1) = 0$
 $x = -7, 1$
 $y\text{-int} = (0, -7)$

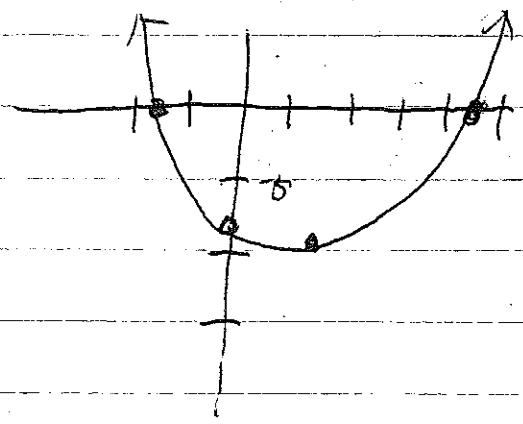
V: $x = \frac{-b}{2a} = \frac{-6}{2 \cdot 1} = (-3, -16)$
 $y = (-3)^2 + 6(-3) - 7$
 $9 - 18 - 7$



② $y = x^2 - 3x - 7$
 $x = \frac{3 \pm \sqrt{9 - 4 \cdot 1 \cdot -7}}{2}$

V: $x = \frac{-b}{2a} = \frac{3}{2 \cdot 1} = (1.5, -9.25)$
 $(1.5)^2 - 3(1.5) - 7$

$x = \frac{3 \pm \sqrt{37}}{2}$
 $y\text{-int} = (0, -7)$



③ $y = a(x-h)^2 + k$
 $-3 = a(2-1)^2 - 4$
 $-3 = a - 4$
 $1 = a$

$y = 1(x-1)^2 - 4$

2.2)

④ $x^3 + 2x^2 - 25x - 50 = 0$

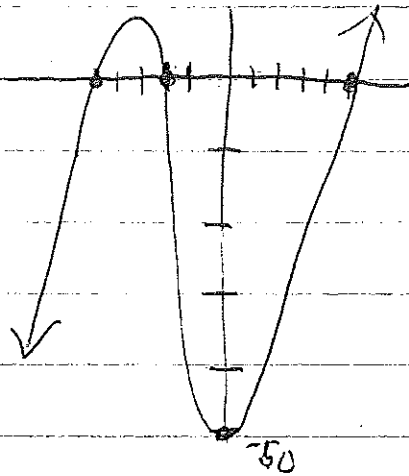
$x^2(x+2) - 25(x+2)$

$(x^2 - 25)(x+2)$

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

$x = \pm 5, -2$

$y\text{-int: } (0, -50)$



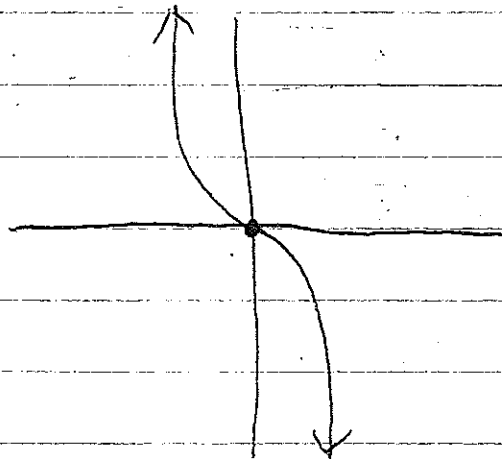
⑤ $-x^5 - 7x^3 - 10x = 0$

$-x(x^4 + 7x^2 + 10) = 0$

$-x(x^2 + 5)(x^2 + 2)$

$x = 0, \pm i\sqrt{5}, \pm i\sqrt{2}$

$y\text{-int: } (0, 0)$

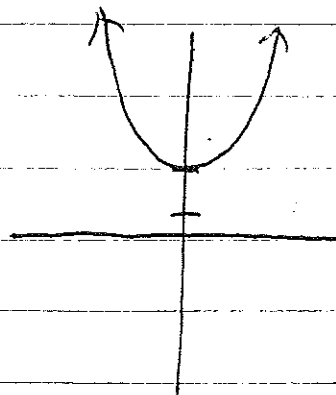


⑥ $x^4 + 3x^2 + 2 = 0$

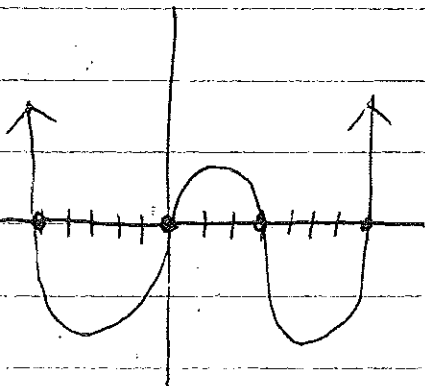
$(x^2 + 2)(x^2 + 1) = 0$

$x = \pm i\sqrt{2}, \pm i$

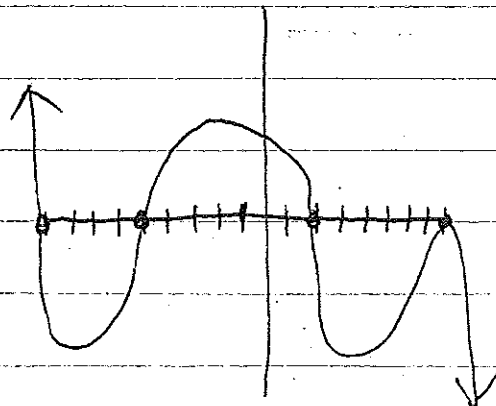
$y\text{-int: } (0, 2)$



⑦



⑧



2.3) Synthetic Division

$$\begin{array}{r|rrrr} 3 & 3 & 20 & 29 & 12 \\ & & -9 & -33 & 12 \\ \hline & 3 & 11 & -4 & 0 \end{array}$$

$$\boxed{3x^2 + 11x - 4} \text{ - Yes}$$

$$\begin{array}{r|rrrr} 4 & 6 & 0 & -2 & 5 \\ & & 24 & 96 & 376 \\ \hline & 6 & 24 & 94 & 371 \end{array}$$

$$\boxed{6x^2 + 24x + 94 + \frac{371}{x-4}} \text{ No}$$

2.5)

$$\textcircled{11} \quad y = x^3 - 2x^2 - 21x - 18$$

$$p/q: \pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18$$

$$\begin{array}{r|rrrr} -1 & 1 & -2 & -21 & -18 \\ & & -1 & 3 & 18 \\ \hline & 1 & -3 & -18 & 0 \end{array}$$

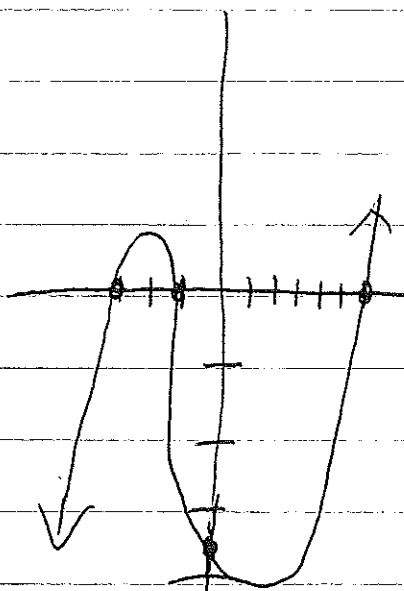
$$1 \quad -3 \quad -18 \quad 0$$

$$x^2 - 3x - 18$$

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

$$x = -1, 6, -3$$

$$y\text{-int} = (0, -18)$$



$$\textcircled{12} \quad 25x^4 + 25x^3 - 154x^2 - 4x + 24 = 0$$

$$p/q: \pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 24, \pm \frac{1}{25}, \pm \frac{2}{25}, \pm \frac{3}{25}, \pm \frac{4}{25}, \pm \frac{6}{25}, \pm \frac{8}{25}, \pm \frac{12}{25}, \pm \frac{24}{25}, \pm \frac{1}{5}, \pm \frac{2}{5}, \pm \frac{3}{5}, \pm \frac{4}{5}, \pm \frac{6}{5}, \pm \frac{8}{5}, \pm \frac{12}{5}, \pm \frac{24}{5}$$

$$\begin{array}{r|rrrrr} 2 & 25 & 25 & -154 & -4 & 24 \\ & & 50 & 150 & -8 & -24 \\ \hline & 25 & 75 & -4 & -12 & 0 \end{array}$$

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

$$y\text{-int} = (0, 24)$$

$$25x^3 + 75x^2 - 4x - 12 = 0$$

$$25x^2(x+3) - 4(x+3) = 0$$

$$(25x^2 - 4)(x+3) = 0$$

