

76. p446

$$\begin{array}{r}
 x^2 + 8x + 15 \quad \overline{) \quad x^3 + 6x^2 - x - 30} \\
 \underline{- x^3 + 8x^2 + 15x} \\
 -2x^2 - 16x - 30 \\
 \underline{- (-2x^2 - 16x - 30)} \\
 0
 \end{array}$$

80. p446

$$\boxed{x - \frac{1}{4}}$$

$$\begin{array}{r}
 x + \frac{12}{16} \overline{) x^2 + \frac{8}{16}x - \frac{3}{16}} \\
 \underline{- x^2 + \frac{12}{16}x} \phantom{- \frac{3}{16}} \\
 - \frac{4}{16}x - \frac{3}{16} \\
 \underline{- \frac{4}{16}x - \frac{3}{16}} \\
 \phantom{- \frac{4}{16}x} 0
 \end{array}$$

$$\frac{48}{256}$$

96.

$$\begin{array}{r|rrrr}
 -2 & 3 & 2 & 3 & 1 \\
 & & -6 & 8 & -22 \\
 \hline
 & 3 & -4 & 11 & -21
 \end{array}$$

$$P(-2) = 3(-2)^3 + 2(-2)^2 + 3(-2) + 1$$

$$P(-2) = -24 + 8 - 6 + 1$$

$$P(-2) = -21$$

$$\text{92. } P(x) = x^2 + 1$$

$$= 2^2 + 1$$

$$= 5$$

$$\begin{array}{r|rrr} 2 & 1 & 0 & 1 \\ & & 2 & 4 \\ \hline & 1 & 2 & \textcircled{5} \end{array}$$

$$52. \quad x^6 + \textcircled{125}$$

Sum of
cubes

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

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

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

$$(x^2 + 5)(x^4 - 5x^2 + 25)$$

$$a = x^2$$

$$b = 5$$

Difference
of Square

$$x^6 - \textcircled{25}$$

$$(x^3)^2 - 5^2$$

$$(x^3 + 5)(x^3 - 5)$$

$$(x^2)^3$$

$$8x^3 + 27$$

$$(2x)^3 + 3^3$$

$$a = 2x$$

$$b = 3$$

7.4 Solve

$$x^3 + 2x^2 - 35x = 0 \quad \text{Set} = 0$$

$$x(x^2 + 2x - 35) = 0 \quad \text{Factor}$$

$$x(x-5)(x+7) = 0 \quad \text{GCF}$$

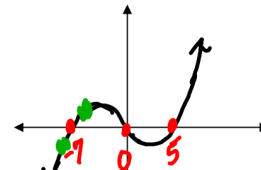
$$x=0 \quad x-5=0 \quad x+7=0 \quad \text{Set factors} \\ = 0$$

$$x=0 \quad x=5 \quad x=-7$$

Zeros
x-intercepts

$$y = x^3 + 2x^2 - 35x$$

x min -10
max 10
scale 1



y min -125
max 125
scale 25

$$x = -7 \quad y = 0$$

2nd. Calc
2 zero

x	y
-7	0
-4	
-5	
0	0
5	0

$$y = x^3 + 2x^2 - 35x$$

$$x^3 + 2x^2 - 35x = 0$$

$$x = -7$$

$$x = 0$$

$$x = 5$$

$$\begin{array}{r|rrr} -7 & 1 & 2 & -35 \\ & & -7 & 35 \end{array}$$

$$\begin{array}{r|rrr} 0 & 1 & -5 & 0 \\ & & 0 & 0 \end{array}$$

$$\begin{array}{r|rrr} 5 & 1 & -5 & 0 \\ & & 5 & 0 \end{array}$$

$$\begin{array}{rrr} 1 & 0 & 0 \end{array}$$

$$(x+7)$$

$$(x+0)$$

$$x$$

$$(x-5)$$

p453

$$12 - 36 \quad x^4$$

$$12 - 24$$

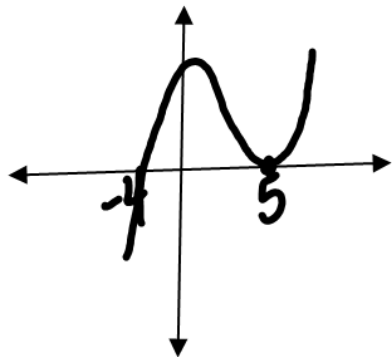
$$28 - 36$$

use factoring

graph first

find zeros

synthetic division



$$x = -4$$

$$x = 5$$

$$x = 5$$