

40

$2i, -3+i, -2i, -3-i$

$(x-2i)(x+2i)(x-(-3+i))(x-(-3-i))$

$(x^2+2ix-2ix-4i^2)(x^2-x(-3-i)-x(-3+i)+(-3-i)(-3+i))$

$(x^2+4)(x^2+3x+ix+3x-ix+9-3i+3i-i^2)$

$(x^2+4)(x^2+6x+10)$

$x^4+6x^3+10x^2+4x^2+24x+40$

$x^4+6x^3+14x^2+24x+40$

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$y = x^3 + 6x^2 + x + 6$

$\pm 1, \pm 2, \pm 3, \pm 6$

---

$\pm 1$

$-6 \mid 1 \quad 6 \quad 1 \quad 6$

$\quad \quad -6 \quad 0 \quad -6$

---

$\quad \quad 1 \quad 0 \quad 1 \quad 0$

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$$\textcircled{32} \quad x^3 + 6x^2 + 9x$$

$$x(x^2 + 6x + 9)$$

$$x(x+3)(x+3)$$

$$x=0, -3, -3$$

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$$\textcircled{3} \quad f(x) = 9x^3 - 81x$$

$$9x(x^2 - 9)$$

$$9x=0 \quad x^2 - 9=0$$

$$x=0 \quad x=\pm 3$$

$$x=0, \pm 3$$

$$\textcircled{4} \quad (2x+5)(x-3)^2$$

$$2x+5=0 \quad x-3=0$$

$$x=-\frac{5}{2} \quad x=3 \text{ mult. of } 2$$

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$$y = (x-5)(x+5)(2x-1)$$

$$y = (x^2 - 25)(2x-1)$$

$$y = 2x^3 - x^2 - 50x + 25$$

Mar 12-9:27 AM

7.11 Divide

$$\begin{array}{r}
 x^2 - x - 6 \\
 \hline
 x+4 \overline{) x^3 + 3x^2 - 10x - 24} \\
 \underline{-x^3 + 4x^2} \phantom{-10x - 24} \\
 \phantom{-x^3 +} -x^2 - 10x \phantom{- 24} \\
 \phantom{-x^3 +} \underline{+x^2 + 4x} \phantom{- 24} \\
 \phantom{-x^3 +} \phantom{-x^2 -} -6x - 24 \\
 \phantom{-x^3 +} \phantom{-x^2 -} \underline{+6x + 24} \\
 \phantom{-x^3 +} \phantom{-x^2 -} \phantom{+6x +} 0
 \end{array}$$

Factor

$$\begin{array}{r}
 -6x - 24 \\
 \underline{+6x + 24} \\
 0
 \end{array}$$

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$$\textcircled{10} \quad 8x^3 - 27 = 0$$

SOAP

$$(2x - 3)(4x^2 + 6x + 9) = 0$$

$$2x - 3 = 0$$

$$4x^2 + 6x + 9 = 0$$

$$\frac{-6 \pm \sqrt{36 - 4(4)(9)}}{2(4)}$$

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$$\textcircled{12} \quad x^4 - 10x^2 + 16 = 0$$

$$(x^2 - 2)(x^2 - 8) = 0$$

$$x^2 = 2$$

$$x^2 = 8$$

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

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

Mar 12-9:35 AM

$$\textcircled{11} \quad x^3 + 5x^2 - 2x - 15 = 0$$

$$\frac{\pm 1, \pm 3, \pm 5, \pm 15}{\pm 1}$$

$$\textcircled{15} \quad 5x^3 - 11x^2 + 7x - 1$$

$$\frac{\pm 1}{\pm 5, \pm 1} = \pm \frac{1}{5}, \pm 1$$

$$\begin{array}{r|rrrr} & 5 & -11 & 7 & -1 \\ & & 5 & -6 & 1 \\ \hline & 5 & -6 & 1 & 0 \end{array}$$

$$\textcircled{x=1} \quad 5x^2 - 6x + 1 = 0$$

Mar 12-9:38 AM