p.521 #11, 14, 15, 30, 37, 40, 49, 52, 53

1. $\dfrac{5x - 15}{5x + 35}$

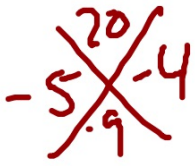
$\dfrac{5(x-3)}{5(x+7)}$

$\dfrac{2x - 12}{2x + 4}$

$\dfrac{2(x-6)}{2(x+2)}$

2. $\dfrac{x^2 + 4x - 21}{x^2 + x - 42}$

$$\frac{(x+7)(x-3)}{(x+7)(x-6)}$$



$$\frac{x^2 - 9x + 20}{x^2 - 7x + 12}$$

$$\frac{(x-5)(x-4)}{(x-3)(x-4)}$$

Difference of Squares.

$$\frac{y^2-4}{5y}\cdot\frac{2y}{y-2}$$

$$\frac{(y+2)(y-2)}{5y}\cdot\frac{2y}{(y-2)}$$

$$\frac{2(y+2)}{5}$$

$$\frac{(y+5)(y-5)}{y^2-25}\cdot\frac{3y}{y-5}$$

$$\frac{3(y+5)}{2}$$

Divide.

$$\frac{x^2 + 4x}{x^2 + 6x + 8} \div \frac{x - 3}{x + 2}$$

$$\frac{x(x+4)}{(x+4)(x+2)} \cdot \frac{(x+2)}{(x-3)}$$

$$\frac{x}{x-3}$$

$$\frac{s^2 + 6s}{s^2 + 11s + 30} \div \frac{s + 3}{s + 5}$$

Simplify the radical expression.

5. $3\sqrt{50}$

$3 \cdot \sqrt{25} \cdot \sqrt{2}$

$3 \cdot 5 \cdot \sqrt{2}$

$15\sqrt{2}$

$-2\sqrt{125}$

$-2\sqrt{25} \cdot \sqrt{5}$

$-2 \cdot 5 \cdot \sqrt{5}$

$-10\sqrt{5}$

6. $\sqrt{75a^2}$

$\sqrt{25} \cdot \sqrt{3} \quad \sqrt{a^2}$

$5 \cdot \sqrt{3} \quad a$

$5a\sqrt{3}$

$-3\sqrt{98x^3}$

$-3\sqrt{49} \cdot \sqrt{2} \quad \sqrt{x^2} \cdot \sqrt{x}$

$-3 \cdot 7 \cdot \sqrt{2} \cdot x \cdot \sqrt{x}$

$-21x\sqrt{2x}$

7. $-2\sqrt{2p} \cdot 2\sqrt{22}$

$-4\sqrt{44p}$

$-4\sqrt{4} \cdot \sqrt{11p}$

$-4 \cdot 2 \cdot \sqrt{11p}$

$-8\sqrt{11p}$

8. $\sqrt{\frac{10}{81}}$ $\frac{\sqrt{10}}{\sqrt{81}}$ $\boxed{\frac{\sqrt{10}}{9}}$ $\sqrt{\frac{5}{16p^4}}$ $\frac{\sqrt{5}}{\sqrt{16}\sqrt{p^4}} = \frac{\sqrt{5}}{4p^2}$

Simplify the radical expression by rationalizing the denominator.

9. $\frac{4}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{4\sqrt{3}}{\sqrt{9}} = \frac{4\sqrt{3}}{3}$ $\frac{3}{\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}} = \frac{3\sqrt{15}}{15} = \frac{\sqrt{15}}{5}$

Simplify the expression.

10. $5\sqrt{10} + 4\sqrt{10} = 9\sqrt{10}$

$5x + 4x = 9x$

$5\sqrt{10} \cdot 4\sqrt{10} = 20\sqrt{100}$

$5x \cdot 4x = 20x^2$

11. $7\sqrt{2} - \sqrt{18}$

$7\sqrt{2} - \sqrt{9} \cdot \sqrt{2}$

$7\sqrt{2} - 3\sqrt{2}$

$4\sqrt{2}$

Solve the equation. Check your solution.

12. $9 = \sqrt{g} + 5$

$-5 \quad -5$

$4^2 = \sqrt{g}^2$

$16 = g$

13. $\sqrt{q - 10} = 3$

$q - 10 = 9$

$q = 19$

$-3 = \sqrt{q} - 4$

$+4 \quad +4$

$1^2 = \sqrt{q}^2$

$1 = q$

14. $\sqrt{11x-8} = \sqrt{10x+5}$

$11x - 8 = 10x + 5$

$-10x \quad -10x$

$x - 8 = 5$

$x = 13$

Solve the equation. Identify any extraneous solutions.

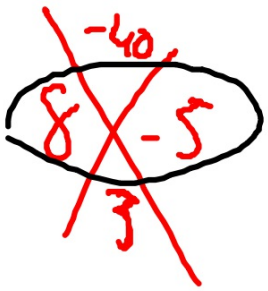
15. $x = \sqrt{-3x + 40}$

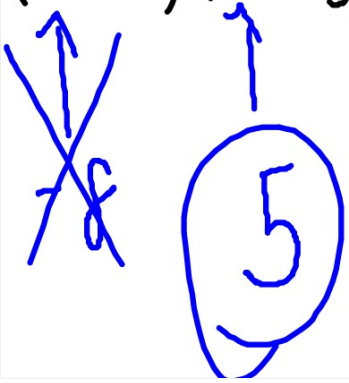
$x^2 = -3x + 40$

$+3x \quad -40 \quad +3x \quad -40$

$x^2 + 3x - 40 = 0$

$(x+8)(x-5) = 0$





$$5\sqrt{2} - 3\sqrt{8}$$

$$5\sqrt{2} - 3\sqrt{4}\,\sqrt{2}$$

$$5\sqrt{2} - 3 \cdot 2\,\sqrt{2}$$

$$5\sqrt{2} - 6\sqrt{2}$$

$$-\sqrt{2}$$