

6.3 Practice A

$$(1) \frac{(x^{1/2} + 2) + (3x^{1/2} - 1)}{4x^{1/2} + 1}$$

$$(3) \frac{(-2x^{1/2} + 3) + (3x^{1/2} - 1)}{x^{1/2} + 2}$$

$$(5) \frac{(-2x^{1/2} + 3) - (x^{1/2} + 2)}{-2x^{1/2} + 3 - x^{1/2} - 2}$$

$$-3x^{1/2} + 1$$

$$(7) (4x^{3/2})(2x^{1/3})$$

$$8x^{3/2+1/3} \rightarrow \frac{9}{6} + \frac{2}{6}$$

$$8x^{5/6}$$

$$(9) (-6x^{1/2})(2x^{1/3})$$

$$-12x^{1/2+1/3} \rightarrow \frac{3}{6} + \frac{2}{6}$$

$$-12x^{5/6}$$

$$(11) \frac{-6x^{1/2}}{4x^{3/2}} = -\frac{3}{2} x^{1/2-3/2}$$

$$= -\frac{3}{2} x^{-1}$$

$$= -\frac{3}{2x}$$

$$(13) \frac{2(4+1) + 3}{2(2) + 3}$$

$$\frac{10 + 3}{4 + 3}$$

$$f(g(4)) = 7$$

$$(15) \frac{2\left(\frac{-6+1}{5}\right) + 3}{2\left(\frac{-5}{5}\right) + 3}$$

$$\frac{2(-1) + 3}{-2 + 3}$$

$$f(h(-6)) = 1$$

$$(17) \frac{(2(-3)+3) + 1}{5}$$

$$\frac{(-6+3) + 1}{5}$$

$$\frac{-3 + 1}{5}$$

$$h(f(-3)) = -\frac{2}{5}$$

$$(19) \frac{2(2x+5)^{-1}}{f(g(x)) = \frac{2}{2x+5}}$$

$$(21) \frac{2\left(\frac{x-4}{2}\right)^{-1}}{\frac{2}{\frac{x-4}{2}}}$$

Keep
change
Flip

$$\frac{2}{1} \cdot \frac{2}{x-4}$$

$$f(h(x)) = \frac{4}{x-4}$$

A rational function

23) $\frac{(2x^{-1}) - 4}{2}$

$\frac{2x^{-1} - 4}{2}$

$\frac{\frac{2}{x} - 4}{2}$ ← Keep
← change
← Flip

$\frac{(\frac{2}{x} - 4) \cdot \frac{1}{2}}{x - 2}$

25) $(2x+2) + x^2$
 $x^2 + 2x + 2$
 D: $(-\infty, \infty)$

26) $\frac{3}{x-2} - 2x+2$
 $x-2 \neq 0$
 $x \neq 2$
 D: $(-\infty, 2) \cup (2, \infty)$

27) $\left(\frac{3}{x-2}\right)(x^2)$
 $\frac{3x^2}{x-2}$

28) $\frac{x^2}{2x+2}$
 $2x+2 \neq 0$
 $x \neq -1$
 D: $(-\infty, -1) \cup (-1, \infty)$

$x-2 \neq 0$
 $x \neq 2$
 D: $(-\infty, 2) \cup (2, \infty)$

30) $2(x^2) + 2$
 $2x^2 + 2$
 D: $(-\infty, \infty)$

29) $\frac{3}{(x^2)-2}$

$x^2 - 2 \neq 0$
 $x^2 \neq 2$
 $x \neq \pm\sqrt{2}$
 D: $(-\infty, -\sqrt{2}) \cup (-\sqrt{2}, \sqrt{2}) \cup (\sqrt{2}, \infty)$