Name: Key

Unit 7 Review

Simplify each expression

1) $\sqrt{50}+\sqrt{32}-\sqrt{\frac{1}{2}}$

$5\sqrt{2}+4\sqrt{2}-\frac{1}{\sqrt{2}}$ $= 9\sqrt{2}-\frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = 9\sqrt{2}-\frac{\sqrt{2}}{2} = \frac{18\sqrt{2}}{2}-\frac{\sqrt{2}}{2} = \frac{17\sqrt{2}}{2}$

a) $4\sqrt{2}$ If you can reduce this you're in good shape!

b) $\sqrt{2}-\frac{\sqrt{2}}{2}$

c) $\frac{17\sqrt{2}}{2}$

d) $17\sqrt{2}$

2) $\sqrt{6}\left(\sqrt{10}+\sqrt{15}\right)$ $\sqrt{60}+\sqrt{90} = 2\sqrt{15}+3\sqrt{10}$

a) $5\sqrt{25}$

b) $5\sqrt{10}$

c) $3\sqrt{15}+2\sqrt{10}$

d) $2\sqrt{15}+3\sqrt{10}$

3) $\left(\sqrt{2}+2\sqrt{8}\right)\left(3\sqrt{6}-\sqrt{5}\right)$ $3\sqrt{12}-\sqrt{10}+6\sqrt{48}-2\sqrt{40} = 3(2\sqrt{3})-\sqrt{10}+6(4\sqrt{3})-2(2\sqrt{10})$

a) $18\sqrt{3}-5\sqrt{10}$

b) $6\sqrt{3}-4\sqrt{10}$

c) $30\sqrt{3}-5\sqrt{10}$

d) $25\sqrt{3}-\sqrt{10}$

$6\sqrt{3}-\sqrt{10}+24\sqrt{3}-4\sqrt{10}$

$30\sqrt{3}-5\sqrt{10}$

4) $\left(5-\sqrt{15}\right)^2$ $25-10\sqrt{15}+15$

a) 10

b) $15-10\sqrt{15}$

c) $40-10\sqrt{15}$

d) $10-10\sqrt{15}$

5) $5\sqrt{19}+4\sqrt{28}-8\sqrt{19}+\sqrt{63}$ $4(2\sqrt{7})$ $3\sqrt{7}$

a) $3\sqrt{19}+11\sqrt{7}$

b) $-3\sqrt{19}+11\sqrt{7}$

c) $8\sqrt{26}$

d) $13\sqrt{19}+11\sqrt{7}$

6) $\left(\sqrt{m-9}\right)^2 = \left(4\sqrt{3}\right)^2$

a) 43 b) 53 c) 73 d) 17

$m - 9 = 16(3)$

$+9 \quad +9$

$m = 53$

$4\sqrt{3} = 4\sqrt{3}$ ✓

7) $y^2 = \left(\sqrt{y+6}\right)^2$

a) -2 b) Ø c) 0 d) 3

$y^2 = y + 6$

$y^2 - y - 6 = 0$

$(y-3)(y+2) = 0$

$-2, 3$

Extraneous

8) $\sqrt{10p+61} - 7 = p$

$+7 \quad +7$

a) -6 b) Ø c) $-\frac{59}{7}$ d) -6, 2

$10p + 61 = (p+7)^2$

$0 = p^2 + 14p + 49 - 10p - 61$

$0 = p^2 + 4p - 12$

$0 = (p+6)(p-2)$

$-6, +2$

9) $\sqrt{2x+15} + 5 = 18$

a) 77 b) -16 c) -1 d) 28

$2x + 15 = 169$

$-15 \quad -15$

$\frac{2x}{2} = \frac{154}{2}$

77

$18 = 18$ ✓

10) $\frac{2h}{h-1} \times \frac{2h+1}{h+2}$ $-2, 1$ could be extraneous; excluded

a) $-\frac{1}{5}$ b) -5 c) $-\frac{1}{5}$; extraneous: –2, 1 d) $\frac{1}{5}$

$2h(h+2) = (h-1)(2h+1)$

$2h^2 + 4h = 2h^2 - 1h - 1$

$\frac{5h}{5} = \frac{-1}{5}$

$h = -1/5$

18

11) $\frac{2q-1}{6} - \frac{q}{3} = \frac{q+4}{18}$

a) -7 b) no solution c) 7 d) $\frac{7}{17}$

$3(2q-1) - 6q = q+4$

$6q - 3 - 6q = q+4$

$-7 = q$

✓ it

$\frac{-15}{6} + \frac{7}{3} = \frac{-3}{18}$

$\frac{-45}{18} + \frac{42}{18} = \frac{-3}{18}$

$\frac{-3}{18} \stackrel{✓}{=} \frac{-3}{18}$

12) $\frac{5}{p-1} - \frac{3}{p+2} = 0$ exclude $-2, 1$

$+\frac{3}{p+2}$ $+\frac{3}{p+2}$

a) $-\frac{13}{2}$; extraneous: -2 b) $\frac{13}{2}$ c) $\frac{7}{2}$ d) $-\frac{13}{2}$

$\frac{5}{p-1} \stackrel{?}{=} \frac{3}{p+2}$

$5p + 10 = 3p - 3$

$2p = -13$

$p = -13/2$

✓

$0 = 0$

$\cdot(n+3)$

13) $\frac{n+2}{n} + \frac{n+5}{n+3} = -\frac{1}{n}$ exclude $-3, 0$

a) $-\frac{9}{2}$; extraneous: -1 b) -1; extraneous: -3 c) $-\frac{9}{2}, -1$ d) $-9, -2$

✓ (-1)

$-1 + \frac{4}{2} = 1$

$1 \stackrel{✓}{=} 1$

okay!

✓ $(-9/2)$

$\frac{-2.5}{-4.5} + \frac{.5}{-1.5} = \frac{-1}{-4.5}$

$\frac{5}{9} + \frac{-1}{3} = \frac{2}{9}$

$\frac{5}{9} - \frac{3}{9} = \frac{2}{9}$

$\frac{2}{9} \stackrel{✓}{=} \frac{2}{9}$

$(n+3)(n+2) + n(n+5) = -1(n+5)$

$n^2 + 5n + 6 + n^2 + 5n = -n - 5$

$2n^2 + 10n + 9 = 0$

$(2n+9)(n+1) = 0$

$-1, -\frac{9}{2}$

extraneous

-1!!!!

$(p-2)(p+2)$ exclude ± 2

14) $\frac{2p}{p-2} + \frac{p+2}{p^2-4} = 1$

a) $-\frac{1}{3}$ b) $-\frac{1}{3}$; extraneous: -2 c) $-3, -2$ d) -3; extraneous: -2

$2p(p+2) + p + 2 = (p-2)(p+2)$

$2p^2 + 4p + p + 2 = p^2 - 4$

$p^2 + 5p + 6 = 0$

$(p+3)(p+2) = 0$

$-3, -2$ extraneous

$\sqrt{-3}$

$\frac{-6}{-5} + \frac{-1}{5} = 1$

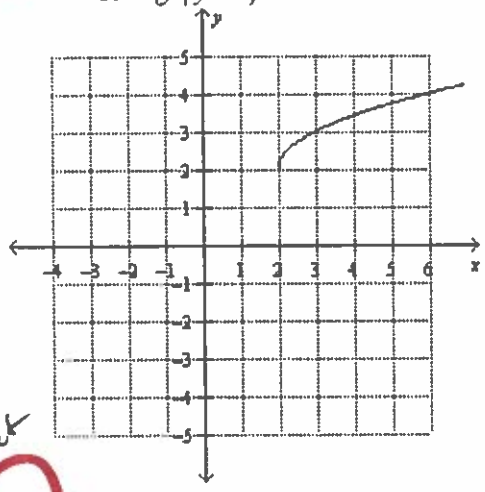
$1 = 1$ ✓

$\sqrt{-2}$

$\frac{-4}{-4} + \frac{2}{0} = 1$

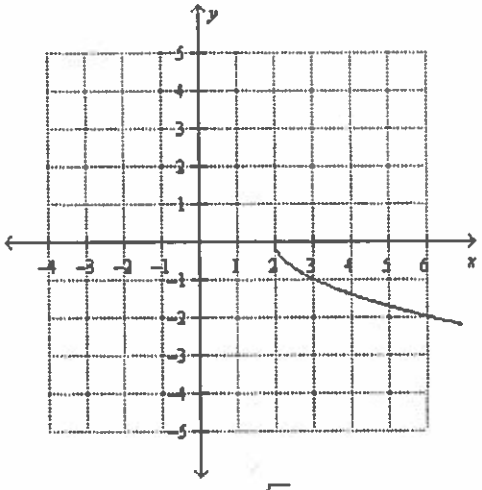
15) Which state below describes and shows the graph of $y = -\sqrt{x-2} + 2$

a) translation of $y = \sqrt{x}$ up 2 units and right 2 units;
D = $\{x \mid x \geq 2\}$,
R = $\{y \mid y \leq 2\}$

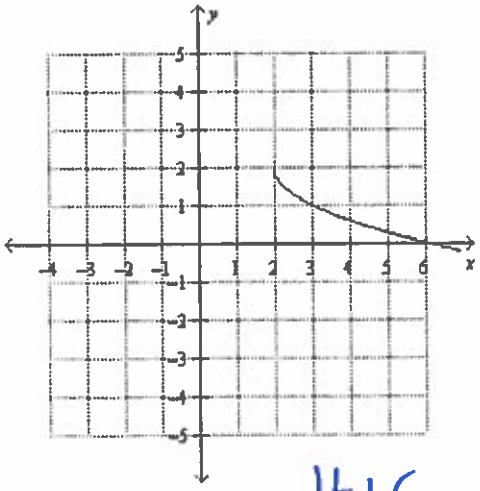


correct

b) translation of $y = \sqrt{x}$ right 2 units, reflected in the x-axis;
D = $\{x \mid x \geq 2\}$,
R = $\{y \mid y \leq 2\}$



c) translation of $y = \sqrt{x}$ up 2 units and right 2 units, reflected in the x-axis;
D = $\{x \mid x \geq 2\}$,
R = $\{y \mid y \leq 2\}$



d) translation of $y = \sqrt{x}$ up 2 units reflected in the x-axis;
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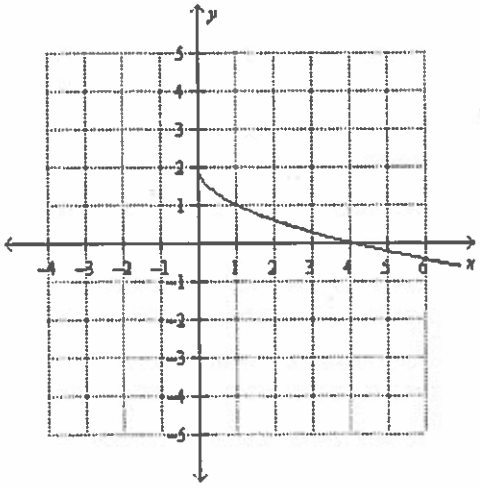
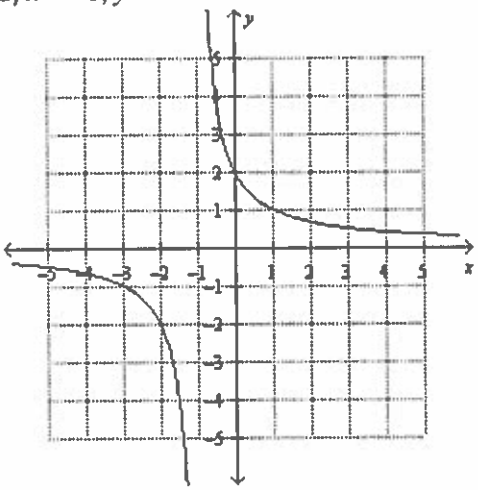


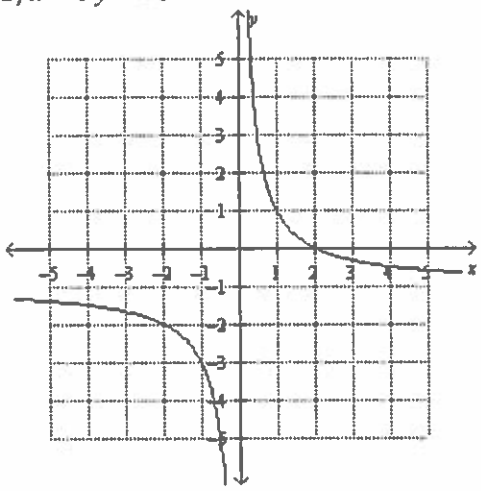
#16 → A

17) Graph $y = \frac{2}{x-1}$ and identify the asymptotes. center (1, 0) $x = 1$ $y = 0$

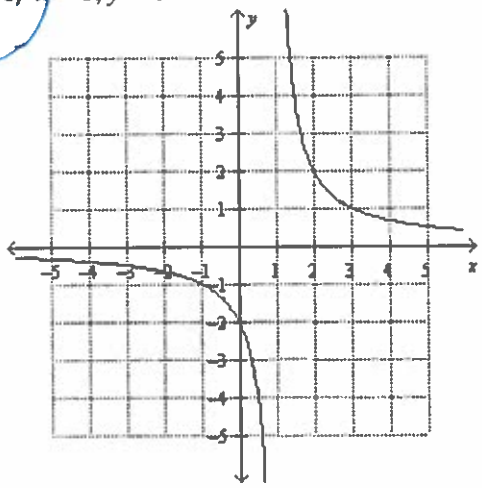
a) $x = -1, y = 0$



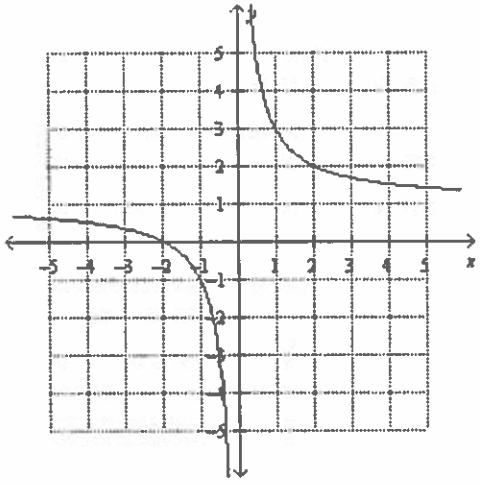
b) $x = 0\ y = -1$



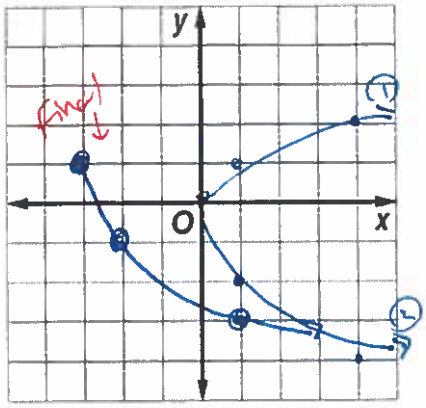
c) $x = 1, y = 0$



d) $= 0, y = 1$



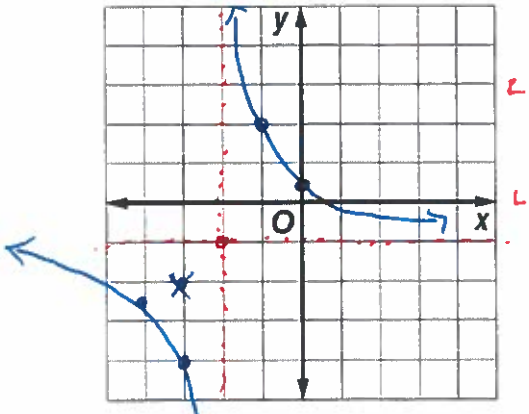
18) Graph $g(x) = -2\sqrt{x+3} + 1$



Domain: $x \geq -3$

Range: $y \leq 1$

19) Graph $g(x) = \frac{3}{x+2} - 1$ center $(-2, -1)$



x	y
-1	2
0	0.5
-3	-4
-4	-2.5

Vertical Asymptote: $x = -2$

Horizontal Asymptote: $y = -1$

Domain: $x \neq -2$

Range: $y \neq -1$