Unit 4B Test Review Key

① $(5x)^{1/2}$ ② $(15x^2y^4)^{1/3}$ ③ $a^{7/5}$ ④ $\sqrt[3]{y^5}$ ⑤ $\sqrt[4]{16a^3b^5}$

⑥ $\sqrt[5]{x^2y^4z^3}$

⑦ $(x-7)^{2/3\cdot 3/2} = 9^{3/2}$

$x-7 = (\sqrt{9})^3$

$x-7 = 3^3$

$x-7 = 27$

$+7 \quad +7$

$\boxed{x = 34}$

⑧ $(x-3)^{1/2\cdot 2/1} = 4^{2/1}$

$x-3 = 16$

$+3 \quad +3$

$\boxed{x = 19}$

⑨ $\sqrt[4]{3x} + 5 = 6$

$-5 \quad -5$

$\sqrt[4]{3x}^4 = 1^4$

$3x = 1$

$\boxed{x = 1/3}$

⑩ $3\sqrt[3]{x+6} + 8 = 14$

$-5 \quad -5$

$\frac{3\sqrt[3]{x+6}}{3} = \frac{9}{3}$

$\sqrt[3]{x+6}^3 = 3^3$

$x+6 = 27$

$-6 \quad -6$

$\boxed{x = 21}$

⑪ $\sqrt{5x+1} = -6$

No Solution

⑫ $\sqrt{x-2}^2 = (x-2)^2$

$x-2 = (x-2)(x-2)$

$x-2 = x^2-4x+4$

$-x \quad +2 \qquad -x \quad +2$

$0 = x^2-5x+6$

$0 = (x-2)(x-3)$

$\boxed{x = 2 \quad x = 3}$

⑬ $2|x+1| = 6$

$|x+1| = 3$

$x+1 = 3 \qquad x+1 = -3$

$-1 \quad -1 \qquad -1 \quad -1$

$\boxed{x = 2 \quad x = -4}$

⑭ $\frac{|x-2|}{5} = 3$

$|x-2| = 15$

$x-2 = 15 \qquad x-2 = -15$

$+2 \quad +2 \qquad +2 \quad +2$

$\boxed{x = 17 \quad x = -13}$

(15) $3|x-2|+4=16$
$-4\ \ -4$

$\frac{3|x-2|}{3} = \frac{12}{3}$

$|x-2| = 4$

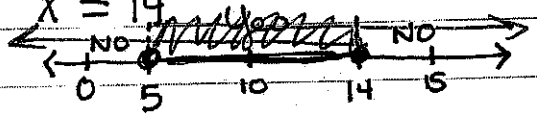
$x-2=4 \quad x-2=-4$
$+2\ +2 \quad +2\ +2$

$\boxed{x=6 \quad x=-2}$

(16) $\sqrt{x-5}^2 \le 3^2$ $\quad x-5 \ge 0$

$x-5 \le 9 \quad x \ge 5$
$+5\ \ +5$

$x \le 14$



$\sqrt{0-5} \le 3 \quad \sqrt{15-5} \le 3$

$\sqrt{10-5} \le 3 \quad \sqrt{10} \le 3$

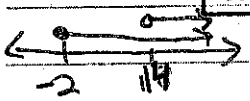
$\sqrt{5} \le 3$ $\quad \boxed{[5, 14]}$

(17) $\sqrt{x+2}^2 > 4^2$

$x+2 \ge 0 \quad x+2 > 16$
$\quad -2 \quad -2$

$x \ge -2 \quad x > 14$

$\boxed{x > 14}$ should be 14.



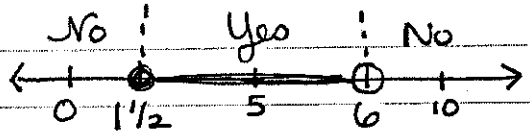
$(14, \infty)$

(18) $\sqrt{2x-3}^2 < 3^2$

$2x-3 < 9 \quad 2x-3 \ge 0$

$2x < 12 \quad 2x \ge 3$

$x < 6 \quad x \ge 3/2$



$\boxed{[1\frac{1}{2}, 6)}$

(19) $f(0) = 5$

(20) $f(8) = 4(8)+7$
$= 32+7$
$= \boxed{39}$

$\sqrt{2(0)-3} < 3 \quad \sqrt{2(5)-3} < 3 \quad \sqrt{2(10)-3} < 3$

$\sqrt{7} < 3 \quad \sqrt{17} < 3$

(21) $g(16) = \frac{1}{2}\sqrt{16}$
$= \frac{1}{2} \cdot 4$
$= \boxed{2}$

(22) $g(-2) = |-2|-1$
$= 2-1$
$= \boxed{1}$

(23) $f(-2) = (-2)^2-3$
$= 4-3 = \boxed{1}$

(24) Right 3, up 4

(25) reflect + stretch by 2, down 5

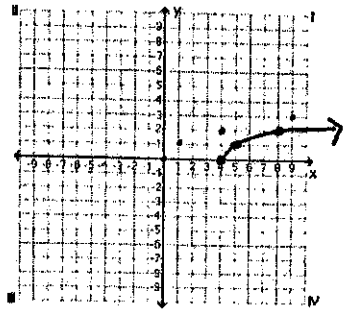
(26) shrink by 1/2, left 3

Sketch the parent and the new graph or show your t-chart. State the domain and range.

27. $y = \sqrt{x-4}$

Domain: $[4, \infty)$

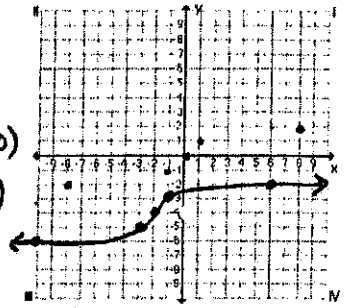
Range: $[0, \infty)$



28. $y = \sqrt[3]{x+2} - 4$

Domain: $(-\infty, \infty)$

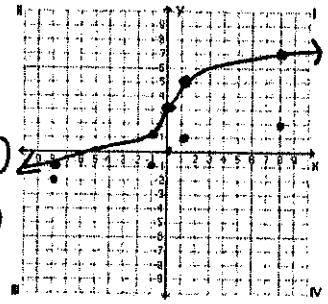
Range: $(-\infty, \infty)$



29. $y = 2\sqrt[3]{x} + 3$

Domain: $(-\infty, \infty)$

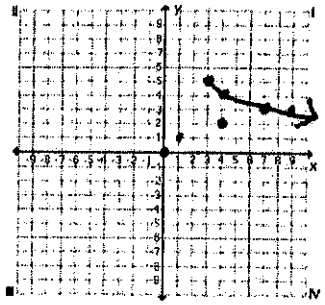
Range: $(-\infty, \infty)$



30. $y = -\sqrt{x-3} + 5$

Domain: $[3, \infty)$

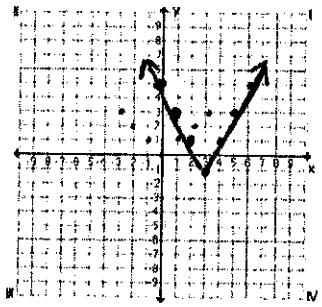
Range: $[5, \infty)$



31. $y = 2|x-3| - 1$

Domain: $(-\infty, \infty)$

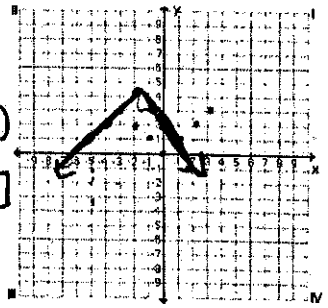
Range: $[-1, \infty)$



32. $y = -|x+2| + 4$

Domain: $(-\infty, \infty)$

Range: $(-\infty, 4]$

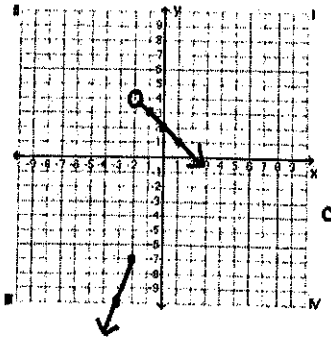


33. $y = \begin{cases} 3x-1, x \le -2 \\ -x+2, x > -2 \end{cases}$

X	y
-2	-7
-3	-10
-4	-13
-5	-16

open

X	y
-2	4
-1	3
0	2
1	1



34. $y = \begin{cases} x+4, x < 3 \\ \frac{1}{2}x, x \ge 3 \end{cases}$

open

X	y
3	7
2	6
1	5
0	4

X	y
3	1½
4	2
5	2½
6	3