MATH 295

§2.6 TRANSFORMATIONS OF FUNCTIONS

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2,3,4,15,23-28,47,48.
61,67,69,71

2. (a) DOWN (b) RIGHT

3. (a) x-AXIS (b) y-AXIS

4. (a) II (b) I (c) III (d) IV

$2f(x+5)-1$

15. (a) STRETCHED VERTICALLY BY FACTOR OF 2.

SHIFTED 5 UNITS TO THE LEFT.

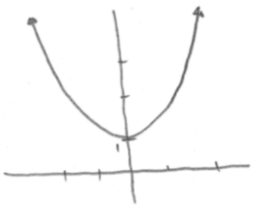
THEN SHIFTED 1 UNIT DOWN

(b) $\frac{1}{4}f(x-3)+5$

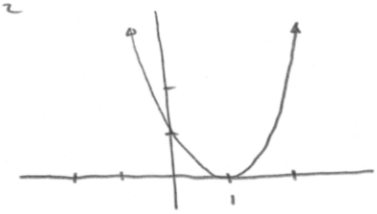
SHRUNK VERTICALLY BY $\frac{1}{4}$,

SHIFTED RIGHT 3 UNITS, THEN SHIFTED UP 5 UNITS.

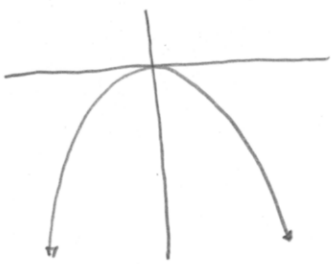
23. (a) $y = x^2 + 1$



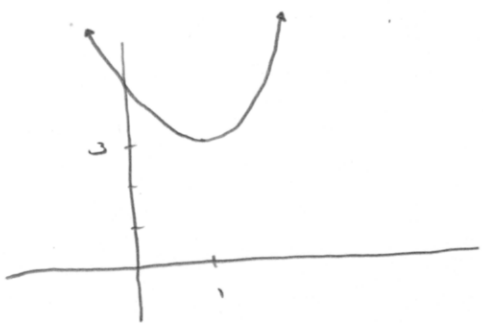
(b) $y = (x-1)^2$



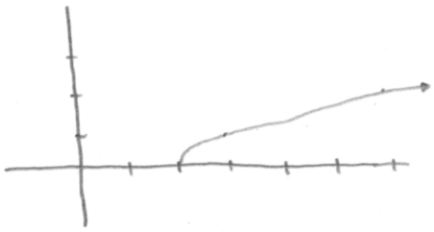
(c) $y = -x^2$



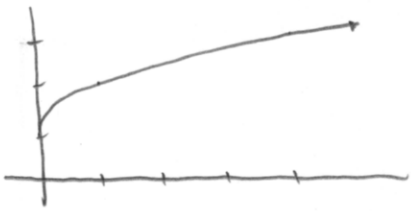
(d) $y = (x-1)^2 + 3$



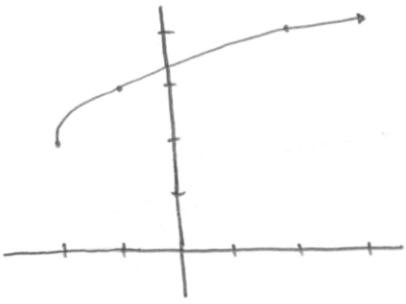
24. (a) $y = \sqrt{x-2}$



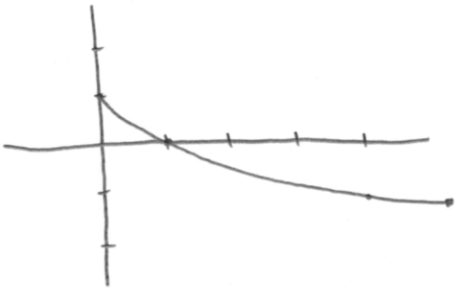
(b) $y = \sqrt{x} + 1$



(c) $y = \sqrt{x+2} + 2$

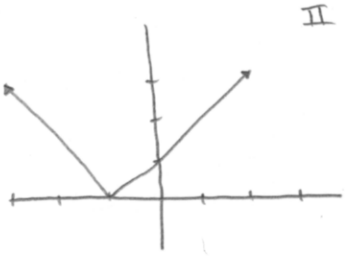


(d) $y = -\sqrt{x} + 1$



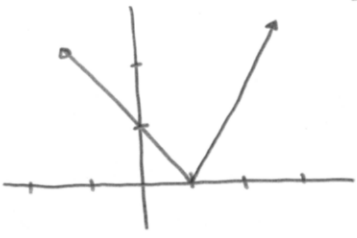
25. $y = |x+1|$

II



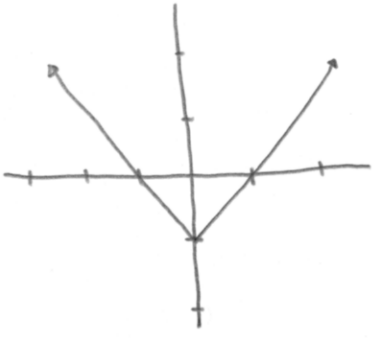
26. $y = |x-1|$

IV



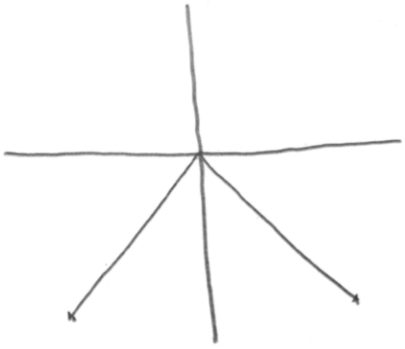
27. $y = |x| - 1$

I

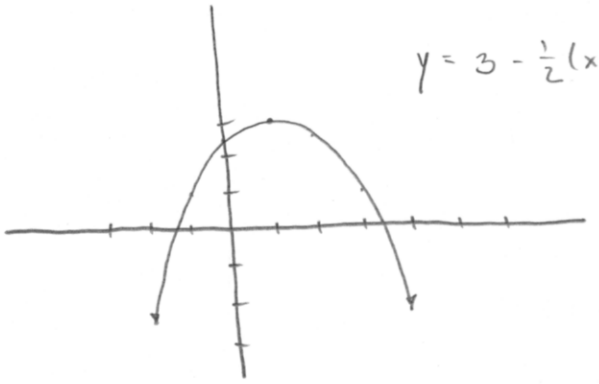


28. $y = -|x|$

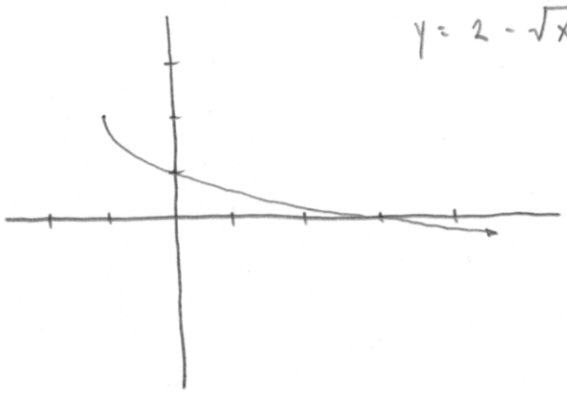
III



47. SHRUNK VERTICALLY BY $\frac{1}{2}$ & REFLECTED ACROSS X-AXIS, THEN SHIFTED RIGHT 1 UNIT & UP 3 UNITS.



48. REFLECTED ACROSS X-AXIS, THEN SHIFTED LEFT ONE UNIT & UP 2 UNITS.



61. $f(x) = x^2 \longrightarrow 2x^2 \longrightarrow 2x^2 - 2 \longrightarrow \boxed{2(x-3)^2 - 2}$

67. $g(x) = -\sqrt{\frac{4}{3}(x+2)}$

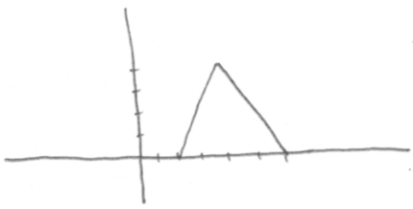
↑

NOTE THAT THE GRAPH HAS BEEN SHRUNK HORIZONTALLY BY A FACTOR OF $\frac{3}{4}$. YOU CAN VERIFY THIS BY CHECKING THAT $g(1) = -2$ & SEEING THAT $(1, -2)$ IS ON THE GRAPH.

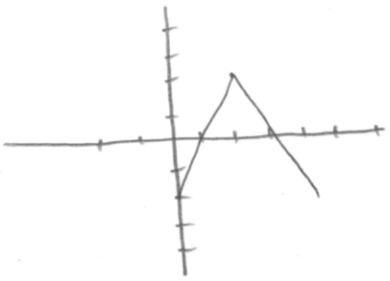
69. (a) ③ (b) ①

(c) ② (d) ④

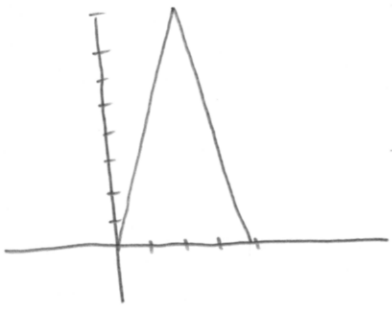
71. (a) $y = f(x-2)$



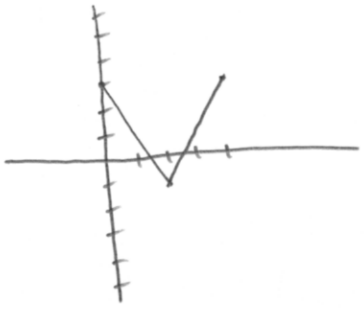
(b) $y = f(x) - 2$



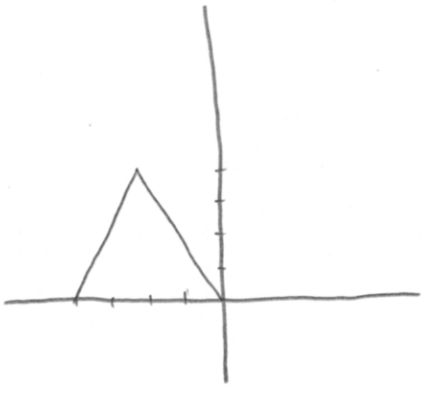
(c) $y = 2f(x)$



(d) $y = -f(x) + 3$



(e) $y = f(-x)$



(f) $y = \frac{1}{2} f(x-1)$