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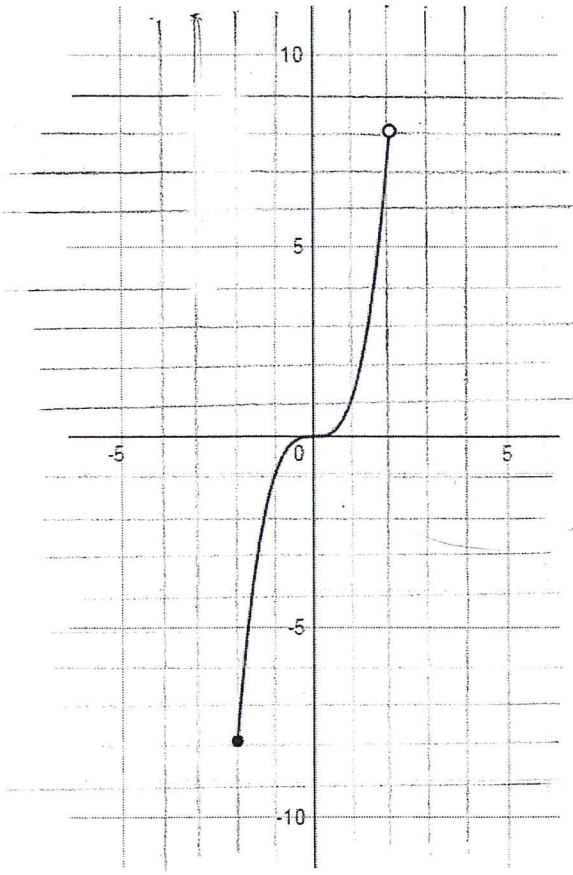
1.8 Function Quiz Name: Solns

1. Given the graph, state the following



Domain: $\{x \in R \mid -2 \leq x < 2\}$ ✓

Range: $\{y \in R \mid -8 \leq x < 8\}$ ✓

Interval(s) of increase: $-2 \leq x < 2$ ✓

Interval(s) of decrease: none ✓

Positive interval(s): $0 < x < 2$ ✓

Negative interval(s): $-2 \leq x < 0$ ✓

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2. Given $f(x) = 2x^2 + 1$ and $g(x) = 3x - 5$ find $f(g(x))$

$f(g(x)) = f(3x-5)$ ✓

$= 2(3x-5)^2 + 1$

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

$= 2(9x^2 - 30x + 25) + 1$

$= 18x^2 - 60x + 50 + 1$

$= 18x^2 - 60x + 51$ ✓

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3. State the transformations in order given $f(x) = -53(x-12)^2 + 71$

- reflect over x axis
- vert stretch factor 53 ✓
- shift Rt 12
- shift up 71 ✓

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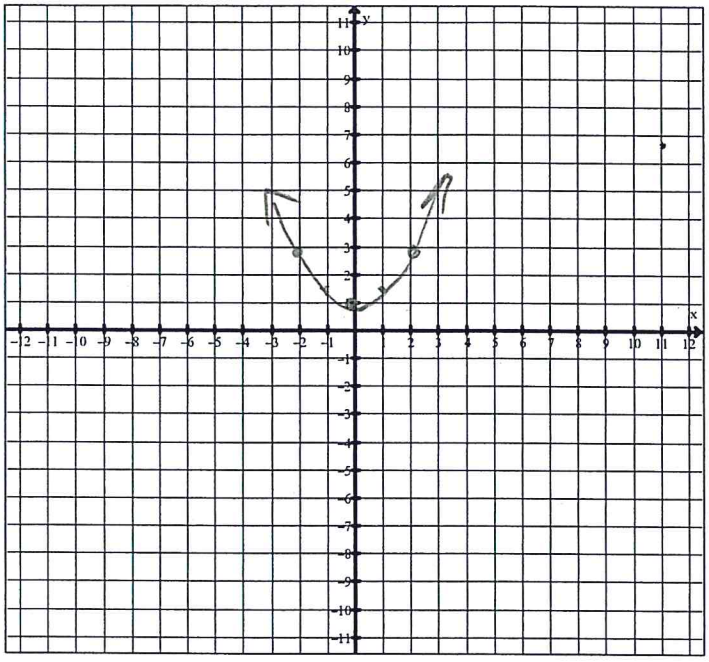
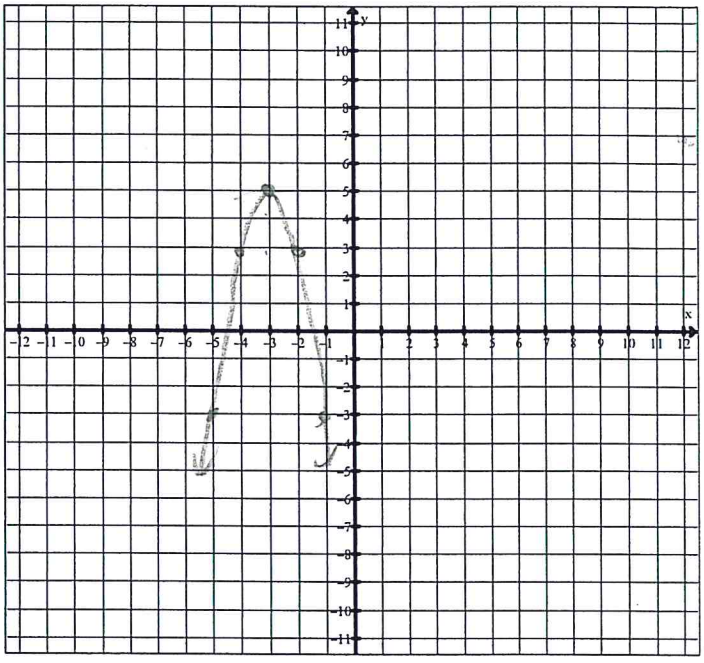
4. Graph

a) $f(x)=\frac{1}{2}x^2+1$



b) $f(x)=-2(x+3)^2+5$



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5. State an equation of a quadratic function with vertex of (15, -23) and that passes through the point (12, -20).

$-20 = a(12-15)^2 - 23$

$3 = a(-3)^2$

$3 = 9a$

$\frac{1}{3} = a$

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an eqn is

$y = \frac{1}{3}(x-15)^2 - 23$

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