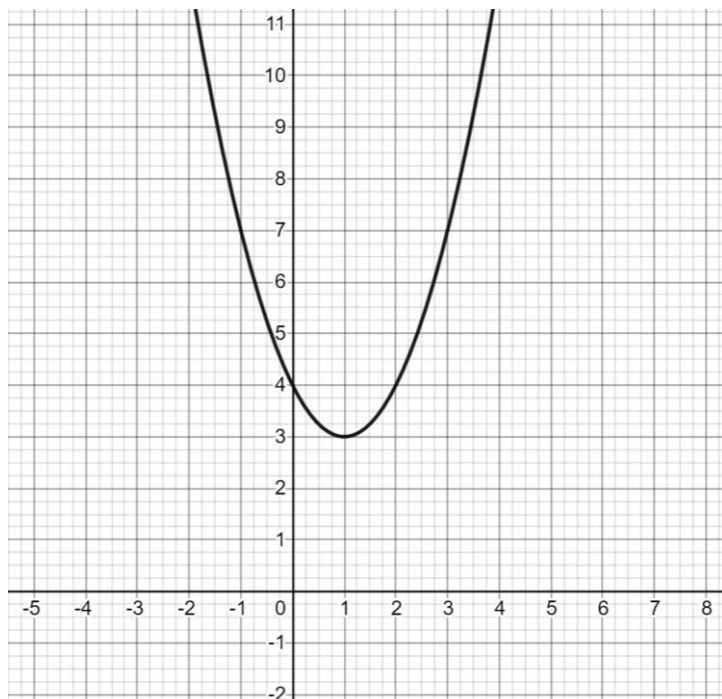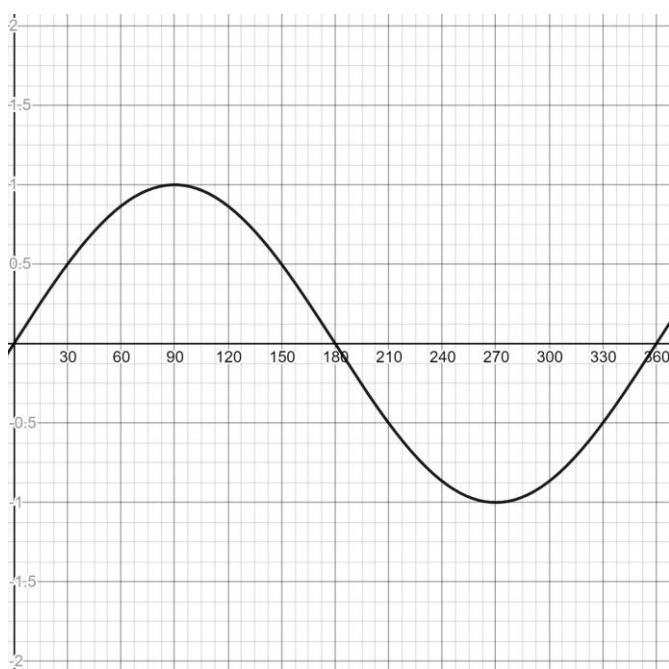# Transforming Graphs of Functions Exam Practice

Q1. The graph below shows a sketch of y = f(x). On the grid, draw
the graph y = f(x+3) – 2.

Answer:_____

Q2. The graph below shows a sketch of y = f(x). On the grid, draw
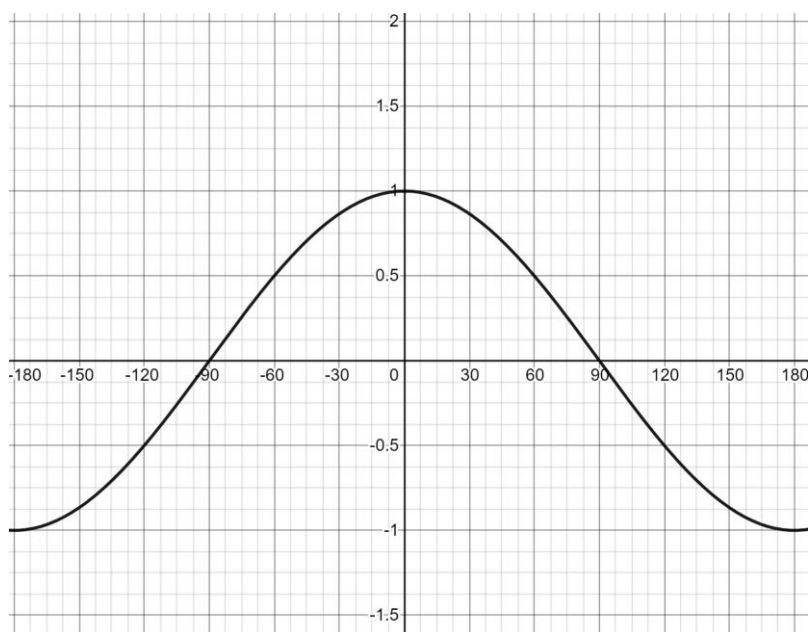the graph y = f(2x).

Answer:_____

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Q3. The graph below shows a sketch of y = f(x). On the grid, draw the graph y = -½f(x)

Answer:_____

(2 marks)

Q4. The graph below shows a sketch of y = f(x). On the grid, draw the graph y = f(-x).
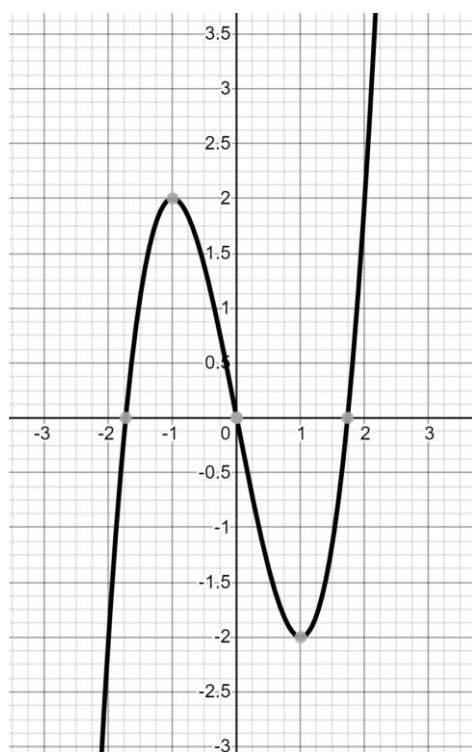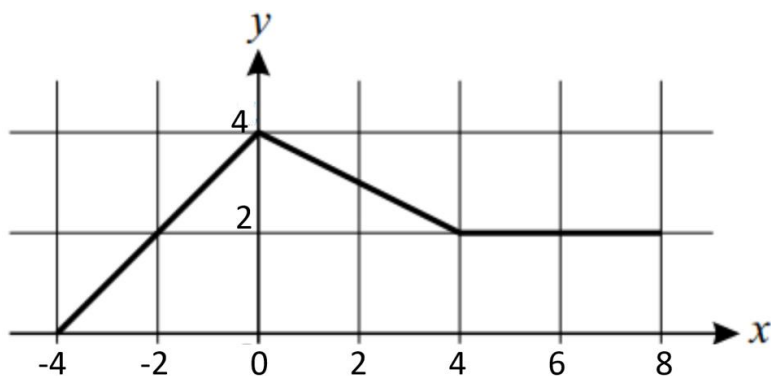

Answer:_____

(2 marks)

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Q5. The graph below is a sketch of y = f(x) which is defined for $-4 \leq x \leq 8$.

a) Write down the value of f(5.5)

Answer:_____

(1 mark)

b) Let g(x) = f(-x). Find the value of g(-2).

Answer:_____

(1 mark)

c) Let h(x) be such that h(-4) = 0 & h(4) = 6.
Describe fully a possible transformation which takes f(x) to h(x).

Answer:_____

(3 marks)

Q6. Let $f(x) = 2x^2 + 4x - 5$. Describe fully the single transformation which takes $f(x)$ to each of the following graphs.

(i) $g(x) = 2x^2 + 4x + 7$
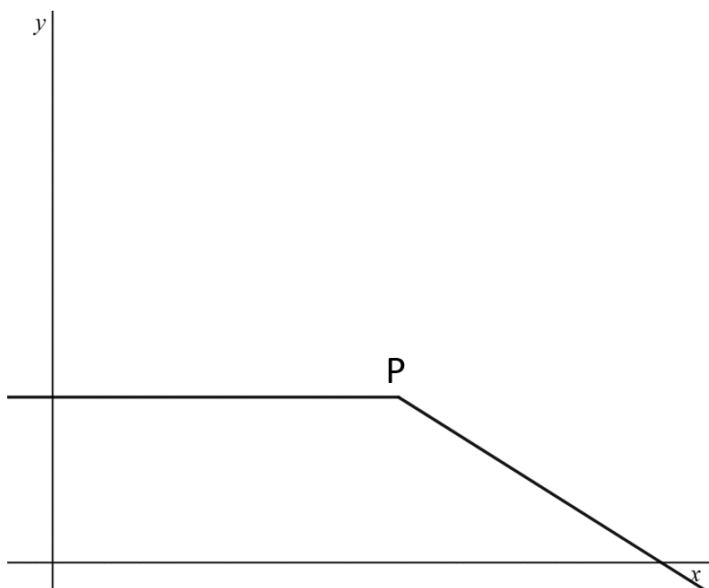
(ii) $h(x) = 2x^2 - 4x + 7$

(iii) $k(x) = 8x^2 + 8x - 5$

Answer:_____

(6 marks)

Q7. Let f(x) be the graph below. The vertex P has coordinates (8, 3).
a) Work out the coordinates of the vertex in each of the following cases:

(i) $g(x) = f(x - 4)$ (ii) $g(x) = f(\frac{1}{3}x)$ (iii) $g(x) = -2f(x)$
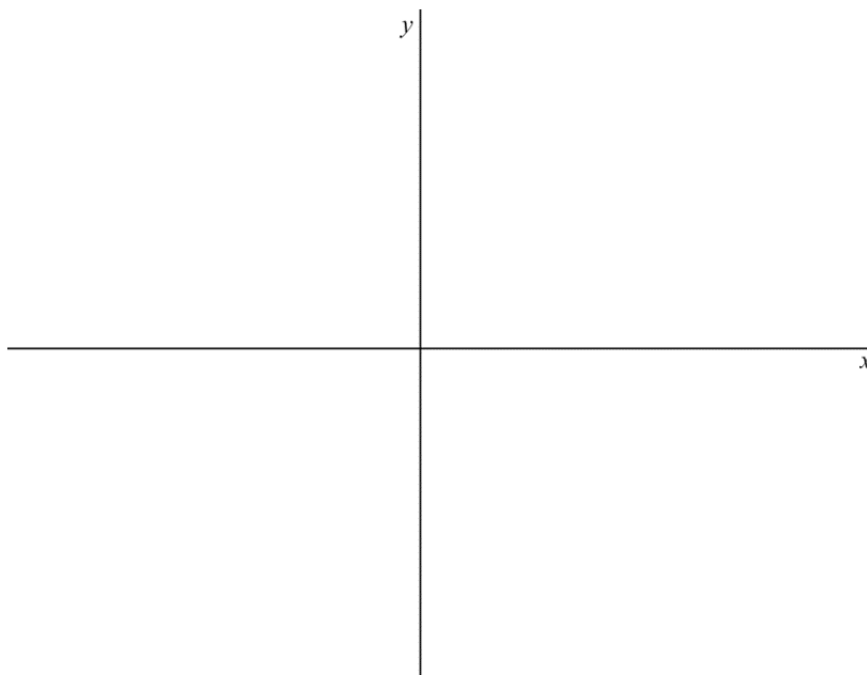
Answer:_____

(6 marks)

Q8. On the grid below sketch the following graphs, clearly indicating any asymptotes:

a) $y = \frac{1}{x}$ b) $y = -\frac{1}{x+1}$

Answer:_____

(6 marks)

Q9. The graph of $y = 5^x$ can be transformed into the graph of $y = 5^{x-2}$ by two different transformations.
Describe each of these transformations fully.

Answer:_____

(4 marks)

Q10. Let $f_0(x) = \sin(x)$,

   $f_{n+1}(x) = 2f_n(x + 30°)$

be an iteration formula for a sequence of functions.

a) Sketch $f_3(x)$ on the axes for $0 \le x \le 360°$

Answer: _____

(4 marks)

b) Solve the equation $f_{12}(x) = 1000$ for $0 \le x \le 90°$ to 1 d.p.

Answer: _____

(3 marks)

Q11. Let $f(x) = 4x^3 + 10$. Determine the function g(x) which $f(x)$ is mapped onto in each of the following cases:

(i) translation by the vector $\begin{pmatrix} -3 \\ -4 \end{pmatrix}$
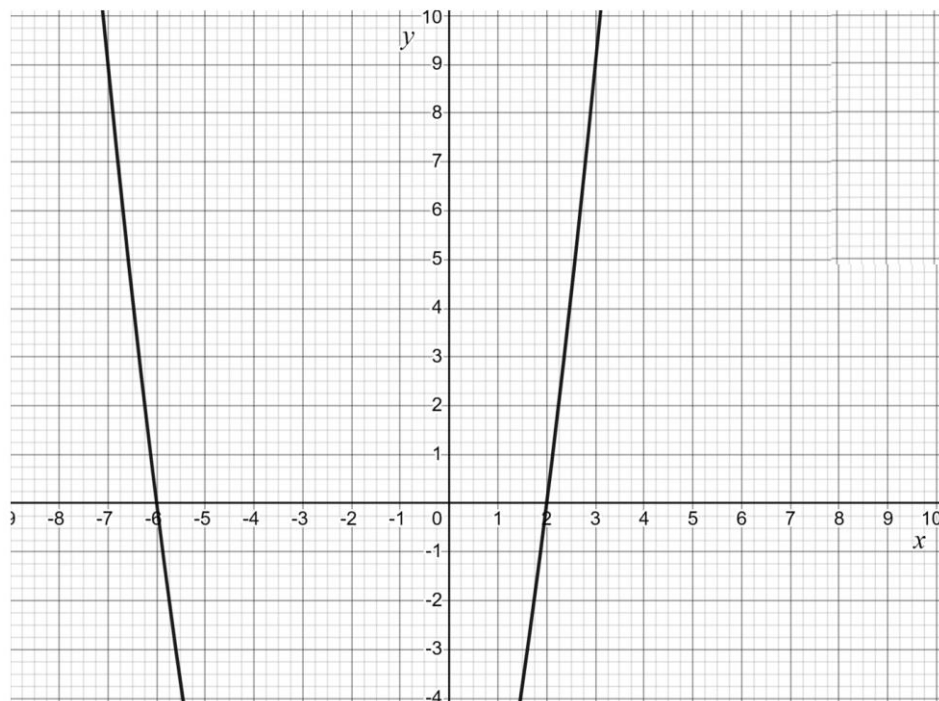
Answer:_____

(2 marks)

(ii) reflection in the $y - axis$

Answer:_____

(2 marks)

(iii) stretch in the $x -$direction scale factor $\frac{1}{3}$

Answer:_____

(2 marks)

Q12. Below is part of a quadratic graph $y = f(x)$, which has turning point P.
The transformed graph $g(x) = f(2x) + 25$ has turning point Q.
The y coordinate of Q is 9. Find the full co-ordinates of P and Q.

Answer:_____

(4 marks)