

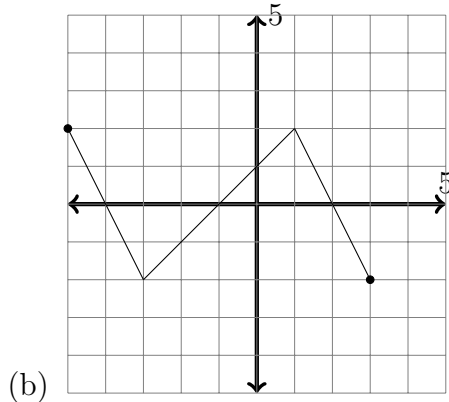
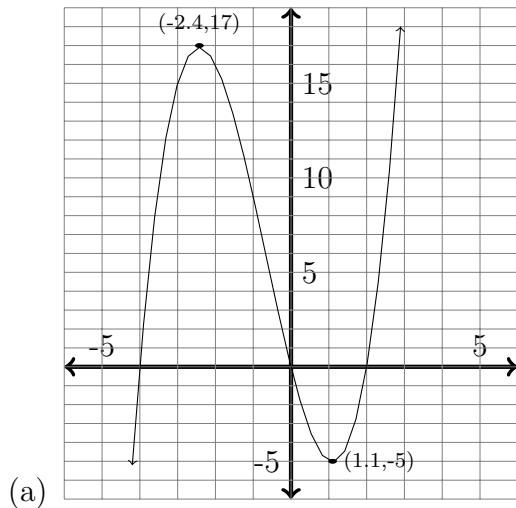


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Quiz 6

Algebra & Functions (Maths 201-016)

- (3 × 1) 1. Given $f(x) = x^2 + 5x$ and $g(x) = 2 - 5x$, find the following:
(a) $f(\frac{1}{2})$ (b) $f(-2) - g(\frac{1}{3})$
(c) the values of x for which $f(x) = 0$ (*i.e.* the x -intercepts).
- (4 × 1) 2. Given $f(x) = x^2 + 6x + 4$, find the following:
(a) $f(2)$ (b) $f(\frac{1}{3})$ (c) $f(a + h)$
(d) the values of x for which $f(x) = -4$
- (3 × 1) 3. Given $f(x) = \sqrt{2x + 1}$, find the following:
(a) $f(4)$ (b) $f(a + b)$
(c) the values of x for which $f(x)$ is defined (*i.e.* the domain of f).
- (2 × 4) 4. Find the (i) domain, (ii) range, (iii) intercepts, and (iv) local extrema of the following functions.



Remember: a dot indicates the graph “stops”; an arrow indicates the graph continues.

Answers

1. (a) $11/4$ (b) $-19/3$ (c) $-5, 0$
2. (a) 20 (b) $55/9$ (c) $a^2 + 2ah + h^2 + 6a + 6h + 4$
(d) $-4, -2$
3. (a) 3 (b) $\sqrt{2a + 2b + 1}$ (c) $x \geq -1/2$
4. (a) i. All x ii. All y
 iii. x -intercepts: $(-4, 0), (0, 0), (2, 0)$; y -intercept: $(0, 0)$
 iv. Local max: $(-2.4, 17)$, Local Min: $(1.1, -5)$
(b) i. $-5 \leq x \leq 3$ ii. $-2 \leq y \leq 2$
 iii. x -intercepts: $(-4, 0), (-1, 0), (2, 0)$; y -intercept: $(0, 1)$
 iv. Local max: $(1, 2)$, Local Min: $(-3, -2)$