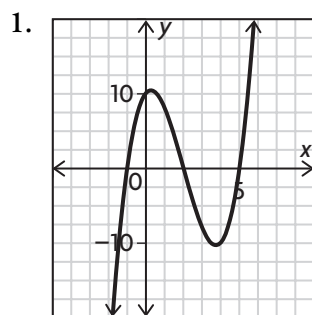
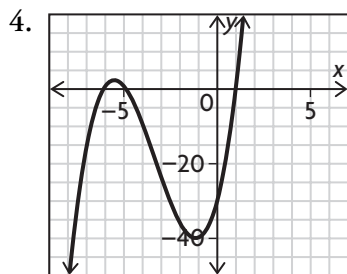


Chapter 3 Review Extra Practice Answers



2. a) The function extends from the third quadrant to the first quadrant; $x \rightarrow -\infty, y \rightarrow -\infty$,
 $x \rightarrow +\infty, y \rightarrow +\infty$.
 b) The function extends from the second quadrant to the fourth quadrant; $x \rightarrow -\infty, y \rightarrow +\infty$,
 $x \rightarrow +\infty, y \rightarrow -\infty$.
 c) The function extends from the second quadrant to the first quadrant; $x \rightarrow -\infty, y \rightarrow +\infty$,
 $x \rightarrow +\infty, y \rightarrow +\infty$.
 d) The function extends from the third quadrant to the fourth quadrant; $x \rightarrow -\infty, y \rightarrow -\infty$,
 $x \rightarrow +\infty, y \rightarrow -\infty$.

3. a) Answers may vary. For example:
 $f(x) = (x - 2)(x - 1)(x + 4)(x + 1)$
 $f(x) = 2(x - 2)(x - 1)(x + 4)(x + 1)$
 $f(x) = 3(x - 2)(x - 1)(x + 4)(x + 1)$
 b) Answers may vary. For example:
 $f(x) = (x - 5)(x - 6)(x + 2)(x - 3)$
 $f(x) = 2(x - 5)(x - 6)(x + 2)(x - 3)$
 $f(x) = 3(x - 5)(x - 6)(x + 2)(x - 3)$
 c) Answers may vary. For example:
 $f(x) = (x + 2)(x + 3)(x - 4)(x - 1)$
 $f(x) = 2(x + 2)(x + 3)(x - 4)(x - 1)$
 $f(x) = 3(x + 2)(x + 3)(x - 4)(x - 1)$
 d) Answers may vary. For example:
 $f(x) = (x - 8)(x + 6)(x + 4)(x + 3)$
 $f(x) = 2(x - 8)(x + 6)(x + 4)(x + 3)$
 $f(x) = 3(x - 8)(x + 6)(x + 4)(x + 3)$



5. a) Vertical stretch by a factor of 3, horizontal translation 2 units left, vertical translation 8 units down.
 b) Reflection across the x -axis, horizontal compression by a factor of $\frac{3}{4}$, horizontal translation 4 units right, vertical translation 6 units up.
 c) Vertical stretch by a factor of 5, horizontal compression by a factor of $\frac{1}{2}$, horizontal translation 7 units right, vertical translation 9 units down.
 d) Reflection across the x -axis, vertical compression by a factor of $\frac{1}{4}$, horizontal translation 5 units left, vertical translation 12 units up.
6. a) $3x^2 + 6x + 8$ with remainder 21
 b) $x^2 - 5x + 10$ with remainder $-24x + 48$
 c) $5x - 21$ with remainder $82x^2 - 125x + 196$
 d) $x - 12$ with remainder $67x^3 - 42x^2 - 101x + 20$
7. a) $3x^2 + 7x + 25$ with remainder 69
 b) $4x^2 + 17x + 49$ with remainder 143
 c) $6x^3 + 14x^2 + 41x + 128$ with remainder 392
 d) $5x^3 + 15x^2 + 41x + 126$ with remainder 369
8. a) $(x + 3)(x - 2)(x + 1)$
 b) $(2x + 1)(x - 5)(x + 6)$
 c) $(4x + 1)(x - 1)(x - 2)(x - 3)$
 d) $(x + 6)(x + 2)(x - 1)(x + 1)$
9. a) $(x + 5)^2(x - 1)$
 b) $(x + 4)(x - 4)(x + 2)$
 c) $(4x + 3)(x - 3)(x + 3)(x + 2)$
 d) $(2x + 1)(x - 2)(x + 3)(x + 2)$
10. a) $(5x - 4)(25x^2 + 20x + 16)$
 b) $(10x - 3)(100x^2 + 30x + 9)$
 c) $(9x - 2)(81x^2 + 18x + 4)$
 d) $(3x - 1)(9x^2 + 3x + 1)$
11. a) $(14x + 9)(196x^2 - 126x + 81)$
 b) $(11x + 7)(121x^2 - 77x + 49)$
 c) $(216)(2x + 1)(4x^2 - 2x + 1)$
 d) $(15x + 8)(225x^2 - 120x + 64)$