



Where Do Birds Relax In Their Houses?

Write the letter of each answer in the box containing the exercise number.

Compare the graph of the function to $f(x) = x^2$.

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|--------------------------------|-----------------------------------|
| 1. $j(x) = x^2 - 5$ | 2. $m(x) = x^2 + 4$ |
| 3. $c(x) = -x^2 - 8$ | 4. $r(x) = 6x^2 - 7$ |
| 5. $g(x) = \frac{1}{3}x^2 + 9$ | 6. $p(x) = -\frac{5}{12}x^2 - 14$ |

Write an equation that represents g in terms of x .

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|---|--|
| 7. $f(x) = 6x^2 + 5$
$g(x) = f(x) + 3$ | 8. $f(x) = \frac{3}{4}x^2 + 7$
$g(x) = f(x) - 10$ |
| 9. $f(x) = -\frac{8}{9}x^2 - 13$
$g(x) = f(x) - 2$ | 10. $f(x) = 14x^2 - 25$
$g(x) = f(x) + 18$ |

Find the zeros of the function.

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|------------------------|------------------------|
| 11. $y = x^2 - 4$ | 12. $y = x^2 - 81$ |
| 13. $f(x) = -x^2 + 36$ | 14. $f(x) = 3x^2 - 75$ |
15. The function $y = -2x^2 + 98$ represents the height y (in inches) of a penny x seconds after falling to the ground. Find the x -intercept.

Answers

- E. $(-9, 0), (9, 0)$ N. $(-5, 0), (5, 0)$
- H. $(7, 0)$ T. $(-2, 0), (2, 0)$
- O. $(-6, 0), (6, 0)$ B. $(10, 0)$
- T. $g(x) = 14x^2 - 7$
- E. $g(x) = \frac{3}{4}x^2 - 3$
- C. $g(x) = 6x^2 + 8$
- O. $g(x) = -\frac{8}{9}x^2 - 15$
- R. reflection in the x -axis, translation 8 units down
- F. vertical shrink by a factor of $\frac{1}{3}$, translation 9 units up
- H. translation 4 units up
- P. reflection in the x -axis, translation 14 units down, vertical shrink by a factor of $\frac{5}{12}$
- N. vertical stretch by a factor of 6, translation 7 units down
- R. translation 5 units down

9	14		11	2	8		5	1	13	4	10		6	12	3	7	15
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What Has More Letters Than The Alphabet?

Write the letter of each answer in the box containing the exercise number.

Find the vertex of the graph of the function.

1. $y = 2x^2 + 8x + 7$ 2. $y = 5x^2 - 10x + 8$

3. $y = 4x^2 + 4x + 13$ 4. $y = x^2 - 8x + 6$

Describe the range of the function.

5. $y = 4x^2 + 16x - 7$

6. $y = -6x^2 + 48x - 40$

7. $y = -3x^2 + 12x + 9$

8. $y = 5x^2 - 40x + 60$

Tell whether the function has a minimum value or a maximum value. Then find the value.

9. $y = 3x^2 - 12x + 1$

10. $y = -4x^2 + 48x - 144$

11. $y = -\frac{1}{2}x^2 - 8x - 7$

12. $y = 2x^2 + 2x + 7$

13. The function $h(t) = -4t^2 + 20t$ represents the height (in feet) of an athlete t seconds after pole vaulting. After how many seconds does the athlete reach his or her maximum height?

Answers

H. (1, 3)

S. (4, -10)

I. (-0.5, 16)

E. (-2, -1)

T. 2.5

B. 5

F. maximum; 0

O. maximum; 25

E. minimum; -11

T. minimum; $\frac{13}{2}$

C. $y \leq 56$

P. $y \geq -20$

F. $y \geq -23$

O. $y \leq 21$

13	2	9		8	11	4	12		7	5	10	3	6	1
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