

For each of the following questions,

$$f(x) = 2x^2 + 7x + 3$$

$$g(x) = 2x + 1$$

$$h(x) = x - 3$$

$$k(x) = -2x + 7$$

Simplify completely. State excluded values if necessary.

1. $h(x) + g(x)$

2. $(-g - f)(x)$

3. $g(x) \cdot k(x)$

4. $-3f(x) + 2(x)$

5. $\left(\frac{f}{g}\right)(x)$

6. $h(k(x))$

7. $(f \circ h)(x)$

Evaluate

8. $f(3)$

9. $g(k(-1))$

10. $f(h(f(-2)))$

21. A spherical water tank holds $8,000ft^3$ of water. What is the diameter of the tank? (Hint: $V = \frac{\pi}{6}d^3$)

22. Police can estimate the speed of a vehicle before the brakes are applied using the formula below where s is the speed in miles per hour and d is the length of the vehicle's skid marks measured in feet is :

$$.75d = \frac{s^2}{30.25}$$

What was the approximate speed of a vehicle that left a skid mark measuring 120 feet?

23. Jamie buys a square tablecloth. The package label declares, the area of the cloth is 800 sq inches. What is the length of a side of the cloth? Express answer as a simplified radical.

24. If a ball is dropped on the ground from a height of h meters (m), then the ball reaches the ground with the velocity $V = \frac{9}{2}\sqrt{h}$ m/sec. If the velocity with which a ball reaches the ground is 36 m/s, from what height was the fall dropped?

25. The time period of a simple pendulum of length l ft is given by $T = \frac{4}{5}\sqrt{2l}$ sec. If the Time period was 8 seconds, what was the length?