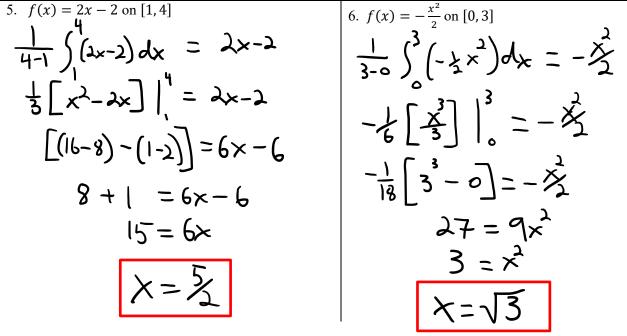
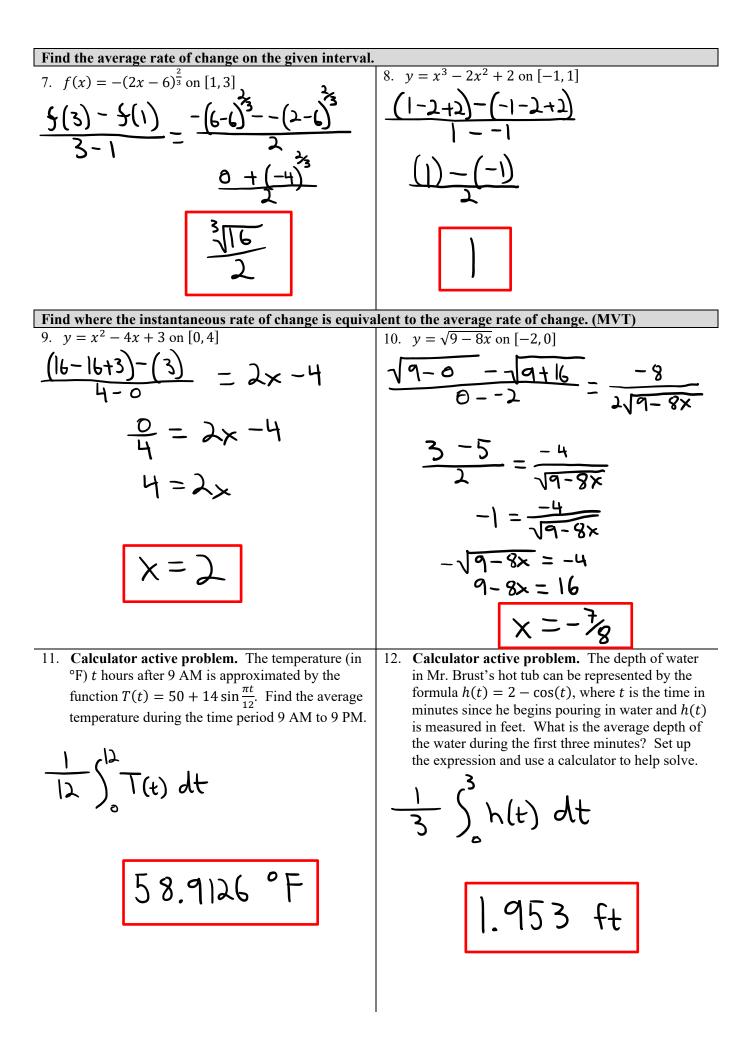


On the given interval, find the *x*-value where the function is equivalent to the average value on that interval.





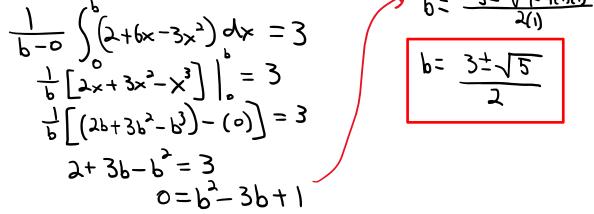
13. Calculator active problem. The temperature outside during a 12-hour period is given by

$$T(h) = 60 - 5\cos\left(\frac{\pi h}{8}\right), \quad 0 \le h \le 12$$

Where T(h) is measured in degrees Fahrenheit and h is measured in hours. Find the average temperature, to the nearest degree Fahrenheit, between h = 2 and h = 9.

$$\frac{1}{7}\int_{1}^{9}T(n) dn \approx 61.982$$
°F

14. Find the number(s) b such that the average value of $y = 2 + 6x - 3x^2$ on the interval [0, b] is equal 3. *Hint*: quadratic formula needed!



15. Calculator active problem. Traffic flow is defined as the rate at which cars pass through an intersection, measured in cars per minute. The traffic flow at a particular intersection is modeled by the function F defined by

$$F(t) = 37 - 6\cos\left(\frac{t}{3}\right)$$
 for $0 \le t \le 20$,

where F(t) is measured in cars per minute and t is measured in minutes.

a. What is the average value of the traffic flow over the time interval $10 \le t \le 15$? Indicate units of measure.

$$\frac{1}{5}\int_{10}^{10} F(t) dt = 39.766$$
 cors per min.

b. What is the average rate of change of the traffic flow over the time interval $10 \le t \le 15$? Indicate units of measure.

$$\frac{F(15) - F(10)}{15 - 10} \simeq -1.518 \text{ Cars/min}^2$$