

Solve:

- 1) At 2 pm, water began leaking from a broken pipe at a rate of $3t + 1$ gal/hour where t is the number of hours after 2 pm. How much water is lost between 3 pm and 10 pm?
- 2) At 4 am, water began leaking from a bathtub at a rate of $3t + 4$ gal/hour where t is the number of hours after 4 am. How much water is lost between 7 am and 10 am?
- 3) At 4 pm, water began leaking from a water tower at a rate of $3t^2 + 5t + 2$ gal/hour where t is the number of hours after 4 pm. How much water is lost between 6 pm and 9 pm?
- 4) $C(x)$ represents the cost of producing x CDs (in units of 1000), $C'(x) = 500x^2 + 4000x + 10000$ (dollars per thousand CDs). Find the cost of producing 8,000 CDs assuming that $C(0) = \$25,000$.
- 5) The marginal cost of producing x DVDs (in units of 1000) is given by $C'(x)$.
 $C'(x) = 400x^2 + 1000x + 20000$ (dollars per thousand DVDs). Find the cost of producing 2,000 DVDs assuming that $C(0) = \$35,000$.
- 6) $C(x)$ represents the cost of producing x DVDs (in units of 1000), $C'(x) = 4000x + 10000$ (dollars per thousand DVDs). Find the cost of producing 11,000 DVDs assuming that $C(0) = \$24,000$.
- 7) The velocity of a particle is $v(t) = 5t + 3$ ft/s. Find the displacement between $t = 4$ and $t = 12$ seconds.
- 8) The velocity of a particle is $v(t) = t^2 - 22t + 112$ ft/s. Find the total distance traveled between $t = 5$ and $t = 9$ seconds.