1. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = -2x + 2x^2; \quad P(3, 12) \]

2. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = -2 - x - x^2; \quad P(2, -8) \]

3. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = -1 - 2x + 3x^2; \quad P(-2, 15) \]

4. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = 1 - 3x + x^2; \quad P(1, -1) \]

5. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = -1 + x^2; \quad P(-3, 8) \]

6. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = 2 - 3x^2; \quad P(2, -10) \]

7. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = -2 - x + x^2; \quad P(-3, 10) \]

8. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = 3 + x - 3x^2; \quad P(1, 1) \]

9. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = 2 - x - x^2; \quad P(0, 2) \]

10. Find the equation of the normal line to the graph of the given function at the given point:
\[ f(x) = -2 + 3x - x^2; \quad P(1, 0) \]

\[ \begin{align*}
1 + x_1 - &= \bar{h} \cdot 01 \\
\frac{q}{1} + x_1 \frac{q}{1} &= \bar{h} \cdot 8 \\
\bar{c} + x_1 &= \bar{h} \cdot 6 \\
\frac{l}{1} + x_1 \frac{l}{1} &= \bar{h} \cdot 2 \\
\frac{9}{19} - + x_1 \frac{9}{1} &= \bar{h} \cdot 9 \\
\frac{c}{1} + x_1 \frac{c}{1} &= \bar{h} \cdot 4 \\
\frac{c}{901} + x_1 \frac{c}{1} &= \bar{h} \cdot 1 \\
\frac{q}{1} + x_1 \frac{q}{1} &= \bar{h} \cdot 6 \\
\frac{l}{1} + x_1 \frac{l}{1} &= \bar{h} \cdot 2 \\
\frac{9}{19} - + x_1 \frac{9}{1} &= \bar{h} \cdot 9 \\
\frac{c}{1} + x_1 \frac{c}{1} &= \bar{h} \cdot 4 \\
\frac{c}{901} + x_1 \frac{c}{1} &= \bar{h} \cdot 1
\end{align*} \]

Answers:
CALCULUS  

Solutions:

1. \( f'(x) = \frac{d}{dx} -2x + 2x^2 = -2 + 4x \)  
   \( \rightarrow \) Find the first derivative of the function.

\( m = f'(3) = -2 + 4(3) = 10 \)  
   \( \rightarrow \) Find the slope of the tangent line at the given point \( P \).

\( m_n = -\frac{1}{m} = -\frac{1}{10} = \frac{1}{10} \)  
   \( \rightarrow \) Find the slope of the normal line at the given point \( P \).

\( y - (12) = -\frac{1}{10} [x - (3)] \)  
   \( \rightarrow \) Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \)  
   \( \rightarrow \) Then simplify:

\( \therefore y = -\frac{1}{10}x + \frac{123}{10} \)

2. \( f'(x) = \frac{d}{dx} -2 - x - x^2 = -1 - 2x \)  
   \( \rightarrow \) Find the first derivative of the function.

\( m = f'(2) = -1 - 2(2) = -5 \)  
   \( \rightarrow \) Find the slope of the tangent line at the given point \( P \).

\( m_n = -\frac{1}{m} = -\frac{1}{-5} = \frac{1}{5} \)  
   \( \rightarrow \) Find the slope of the normal line at the given point \( P \).

\( y - (-8) = \frac{1}{5}[x - (2)] \)  
   \( \rightarrow \) Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \)  
   \( \rightarrow \) Then simplify:

\( \therefore y = \frac{1}{5}x + \frac{-42}{5} \)

3. \( f'(x) = \frac{d}{dx} -1 - 2x + 3x^2 = -2 + 6x \)  
   \( \rightarrow \) Find the first derivative of the function.

\( m = f'(-2) = -2 + 6(-2) = -14 \)  
   \( \rightarrow \) Find the slope of the tangent line at the given point \( P \).

\( m_n = -\frac{1}{m} = -\frac{1}{-14} = \frac{1}{14} \)  
   \( \rightarrow \) Find the slope of the normal line at the given point \( P \).

\( y - (15) = \frac{1}{14}[x - (-2)] \)  
   \( \rightarrow \) Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \)  
   \( \rightarrow \) Then simplify:

\( \therefore y = \frac{1}{14}x + \frac{106}{7} \)

4. \( f'(x) = \frac{d}{dx} -1 - 3x + x^2 = -3 + 2x \)  
   \( \rightarrow \) Find the first derivative of the function.

\( m = f'(1) = -3 + 2(1) = -1 \)  
   \( \rightarrow \) Find the slope of the tangent line at the given point \( P \).

\( m_n = -\frac{1}{m} = -\frac{1}{-1} = 1 \)  
   \( \rightarrow \) Find the slope of the normal line at the given point \( P \).

\( y - (-1) = 1[x - (1)] \)  
   \( \rightarrow \) Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \)  
   \( \rightarrow \) Then simplify:

\( \therefore y = 1x + -2 \)

5. \( f'(x) = \frac{d}{dx} -1 + x^2 = 2x \)  
   \( \rightarrow \) Find the first derivative of the function.

\( m = f'(-3) = 2(-3) = -6 \)  
   \( \rightarrow \) Find the slope of the tangent line at the given point \( P \).

\( m_n = -\frac{1}{m} = -\frac{1}{-6} = \frac{1}{6} \)  
   \( \rightarrow \) Find the slope of the normal line at the given point \( P \).

\( y - (8) = \frac{1}{6}[x - (-3)] \)  
   \( \rightarrow \) Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \)  
   \( \rightarrow \) Then simplify:

\( \therefore y = \frac{1}{6}x + \frac{17}{2} \)

6. \( f'(x) = \frac{d}{dx} 2 - 3x^2 = -6x \)  
   \( \rightarrow \) Find the first derivative of the function.
m = f'(2) = -6(2) = -12 ▶ Find the slope of the tangent line at the given point P.

\[ m_n = -\frac{1}{m} = -\frac{1}{-12} = \frac{1}{12} \] ▶ Find the slope of the normal line at the given point P.

\[ y - (-10) = \frac{1}{12}[x - (2)] \] ▶ Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \) ▶ Then simplify:

\[ y = \frac{1}{12}x + \frac{-61}{6} \]

7. \( f'(x) = \frac{d}{dx} -2 - x + x^2 = -1 + 2x \) ▶ Find the first derivative of the function.

\[ m = f'(-3) = -1 + 2(-3) = -7 \] ▶ Find the slope of the tangent line at the given point P.

\[ m_n = -\frac{1}{m} = -\frac{1}{-7} = \frac{1}{7} \] ▶ Find the slope of the normal line at the given point P.

\[ y - (10) = \frac{1}{7}[x - (-3)] \] ▶ Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \) ▶ Then simplify:

\[ y = \frac{1}{7}x + \frac{73}{7} \]

8. \( f'(x) = \frac{d}{dx} 3 + x - 3x^2 = 1 - 6x \) ▶ Find the first derivative of the function.

\[ m = f'(1) = 1 - 6(1) = -5 \] ▶ Find the slope of the tangent line at the given point P.

\[ m_n = -\frac{1}{m} = -\frac{1}{-5} = \frac{1}{5} \] ▶ Find the slope of the normal line at the given point P.

\[ y - (1) = \frac{1}{5}[x - (1)] \] ▶ Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \) ▶ Then simplify:

\[ y = \frac{1}{5}x + \frac{4}{5} \]

9. \( f'(x) = \frac{d}{dx} -2 - x - x^2 = -1 - 2x \) ▶ Find the first derivative of the function.

\[ m = f'(0) = -1 - 2(0) = -1 \] ▶ Find the slope of the tangent line at the given point P.

\[ m_n = -\frac{1}{m} = -\frac{1}{-1} = 1 \] ▶ Find the slope of the normal line at the given point P.

\[ y - (2) = 1[x - (0)] \] ▶ Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \) ▶ Then simplify:

\[ y = x + 2 \]

10. \( f'(x) = \frac{d}{dx} -2 + 3x - x^2 = 3 - 2x \) ▶ Find the first derivative of the function.

\[ m = f'(1) = 3 - 2(1) = 1 \] ▶ Find the slope of the tangent line at the given point P.

\[ m_n = -\frac{1}{m} = -\frac{1}{1} = -1 \] ▶ Find the slope of the normal line at the given point P.

\[ y - (0) = -1[x - (1)] \] ▶ Use the Point-Slope formula: \( y - y_1 = m_n(x - x_1) \) ▶ Then simplify:

\[ y = -1x + 1 \]