EXAM 4 ANSWERS

VERSION A


Tearoff Answers

1. Maximize Area = \(xy\), Constraint: \(1200 = 4y + 10x\), \(x = 60\), \(y = 150\), maximum area is 9000 square feet
2. I. a) critical numbers at \(x = -1, 3\) and \(5\)  c) increasing on \((-\infty, -1)\) and \((3, 5)\)
d) decreasing on \((-1, 3) \cup (5, \infty)\)  e) relative maximum at \(x = -1, 5\)
f) relative minimum at \(x = 3\)  
g) concave up where \(f'\) is increasing: \((1, 4)\)
h) concave down where \(f'\) is decreasing: \((-\infty, 1) \cup (4, \infty)\)
i) inflection points at \(x = 1\) and \(4\)
3. a) \(v(t) = t^2 - 3t - 4\)  b) object is moving backwards on interval \((0, 4)\)
c) \(s(t) = \frac{t^3}{3} - \frac{3}{2}t^2 - 4t;\) distance traveled: \(\frac{33}{2}\) cm

VERSION B


Tearoff Answers

1. Maximize Area = \(xy\), Constraint: \(1600 = 8y + 20x\), \(x = 40\), \(y = 100\), maximum area is 4000 square feet
2. I. a) critical numbers at \(x = -3, -1\) and \(3\)  c) increasing on \((-3, -1)\) and \((3, \infty)\)
d) decreasing on \((-\infty, -3) \cup (-1, 3)\)  e) relative maximum at \(x = -1\)
f) relative minimum at \(x = -3, 3\)  
g) concave up where \(f'\) is increasing: \((-\infty, -2) \cup (1, \infty)\)
h) concave down where \(f'\) is decreasing: \((-2, 1)\)
i) inflection points at \(x = -2\) and \(1\)
3. a) \(v(t) = t^2 - 5t - 6\)  b) object is moving backwards on interval \((0, 6)\)
c) \(s(t) = \frac{t^3}{3} - \frac{5}{2}t^2 - 6t;\) distance traveled: \(\frac{63}{2}\) cm