BC Calculus
Test # 3 (1–70) Review Answers

61a. 

b. $f(x) = 3x^2 - 4x + 2$

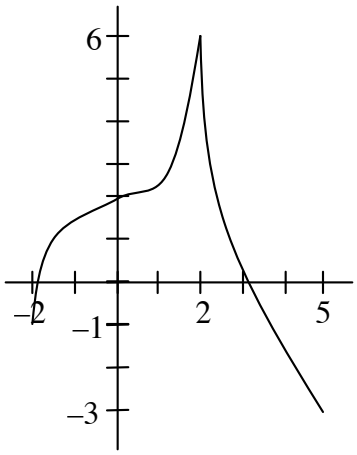
62a. 20 j

b. $d = 24 - \ln 5$ units

63a. $\frac{dy}{dx} = 0$ (stationary numbers),
$\frac{dy}{dx}$ is undefined (end points, cusp points)

b. max: 192 @ x = 6, min: –16 @ x = 2

c.



64a. $\frac{1}{\sqrt{9 - x^2}}$ b. $\frac{1}{\sqrt{1 - x^2}}$ c. $\frac{2x}{\sqrt{16 - x^4}}$

d. $\frac{\cos x}{\sqrt{4 - \sin^2 x}}$ e. $\frac{6}{36 + x^2}$ f. $\frac{1}{1 + x^2}$

g. $\frac{-6}{36 + x^2}$ h. $\frac{6x^2}{4 + x^6}$ i. $\frac{-3\sin x}{9 + \cos^2 x}$

j. $\arcsin\frac{x}{2} + C$ k. $2\arcsin\frac{x}{3} + C$ l. $3\arcsin\frac{x}{\sqrt{10}} + C$

m. $\arctan x + C$ n. $3\arctan\frac{x}{2} + C$ o. $\frac{1}{\sqrt{2}}\arctan\frac{x}{\sqrt{8}} + C$

65a. 281.25 ft

b. 7.3175 sec

66a. $\frac{1}{3}x^3 + \frac{1}{2}x^2 + C$ b. $x + \ln|x| + C$ c. $\frac{2}{15}(x+1)^{3/2}(3x-2) + C$

d. $\frac{1}{3}\int_0^0 e^u du$ e. $\int_0^1 u^{-3} du$

67a. $\frac{256}{3}$ units^2 b. $4\frac{1}{2}$ units^2

68. neither

69a. $x^2\left(\ln x - \frac{1}{2}\right) + C$ b. $-\frac{1}{3}\left(x\cos(3x) - \frac{1}{3}\sin(3x)\right) + C$ c. $\frac{2}{9}e^{3x}(3x-1) + C$

70a. d.n.e. b. d.n.e. c. d.n.e. d. d.n.e.