SOLUTIONS

Fortify Sample Exam 1B

—— Question 1 -

a.
$$\frac{dy}{dx} = \frac{2x\sin(2x)}{(2-x^2)^2} + \frac{2\cos(2x)}{2-x^2}$$

b.
$$\frac{dy}{dx} = \frac{2x^3 e^{\frac{x}{3}}}{3} + 6x^2 e^{\frac{x}{3}}$$

Question 2 -

$$m=\frac{9}{4}$$

Question 3 -

- **a.** Height = 80 m
- **b.** Horizontal distance = $4\sqrt{10}$ m

_____ Question 4 -

a.
$$Pr(X < 8) = 0.5$$

b.
$$a = \frac{3}{4}$$

_____ Question 5 _____

a.
$$a = 6\sqrt{3}$$

b.
$$\left(\frac{\pi}{6}, \sqrt{3}\right)$$
 and $\left(\frac{7\pi}{6}, -\sqrt{3}\right)$

Question 6 —

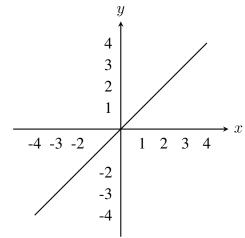
a.
$$Pr(X=3) = \frac{343}{1000}$$

b.
$$\Pr(X = 1) = \frac{189}{1000}$$

Question 7

a.
$$g^{-1}:(2, \infty) \to R, \ g^{-1}(x) = \frac{1}{3}\log_{e}(x-2)$$

b.



c.
$$g(g^{-1}(3x)) = \frac{6x-3}{3x-2}$$

Question 8

ai.
$$x = \frac{a}{2}$$

aii.
$$a > \sqrt{2e}$$

b.
$$a = \frac{e}{2}$$

Question 9

$$E(X) = 2\log_{\mathrm{e}}(2) - 1$$