

# SOLUTIONS

## Fortify Sample Exam 2B

### Section A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	E	D	A	B	E	A	E	C	B	C	C	D	C	B	C	E	E	C	E

### Section B

#### Question 1

a.  $h = \frac{192}{r^2}$

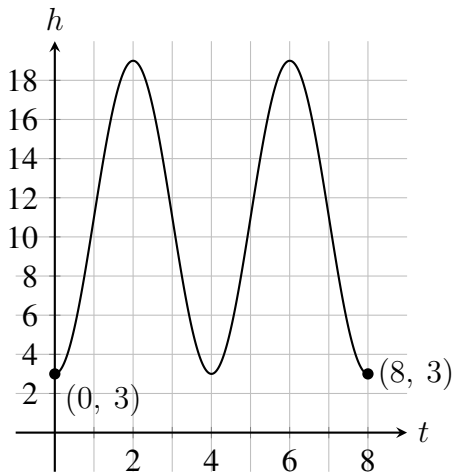
b.  $A = 2\pi \left( r^2 + \frac{192}{r} \right)$

c.  $h = 2\sqrt[3]{96}$  cm

#### Question 2

a.  $a = 11, b = 8, c = \frac{\pi}{2}$

b.



c.  $t = 0.76$  minutes

d. 3 minutes and 1 second

e.  $\frac{\pi}{15}$  metres/second

#### Question 3

a. 7:57pm

b.  $t = 3.59$ .

$\therefore$  they will remain trapped.

c. Check with your teacher.

d.  $x = 28, 131$  m

e. Check with your teacher.

f. At  $x = 18.66$  km,  $t = 3.33$ .

$\therefore$  they can still make it.

g.  $a = 50, b = 950, c = \frac{2}{3}$

h. 9:41pm

i. 105.88 lux

#### Question 4

ai.  $\Pr(X = 0) = 0.0005$

aii.  $\Pr(X < 8) = 0.2131$

bi.  $\Pr\left(\hat{p} \leq \frac{5}{12}\right) = 0.6810$

bii.  $CI = (0.4458, 0.4542)$

c.  $a = 89.7\%$

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**Question 5**

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**ai.**  $f'(x) = \frac{\log_e(x) \times e^{(\log_e(x))^2}}{x}$

**aii.**  $f'(2) = 0.56$

**b.**  $k = 1.649$

**c.**  $t(x) = 0.389x$

**d.**  $P = (0.618, 0.630)$

**ei.**  $A_x = e^{-\sqrt{\log_e(2)}}$

$B_x = e^{\sqrt{\log_e(2)}}$

**eii.** Area = 1.276 units<sup>2</sup>