

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

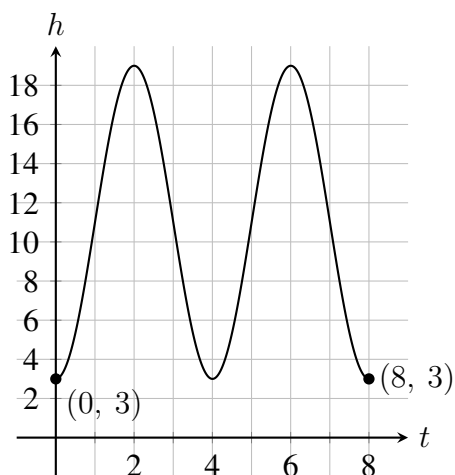
b. $A = 2\pi \left(r^2 + \frac{192}{r} \right)$

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

Question 2

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

b.



c. $t = 0.76 \text{ minutes}$

d. 3 minutes and 1 second

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

Question 3

a. 7:57pm

b. $t = 3.59$.

$\therefore$ they will remain trapped.

c. Check with your teacher.

d. $x = 28, 131 \text{ m}$

e. Check with your teacher.

f. At $x = 18.66 \text{ km}, t = 3.33$.

$\therefore$ 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. $a = 89.7\%$

Question 5

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 units²