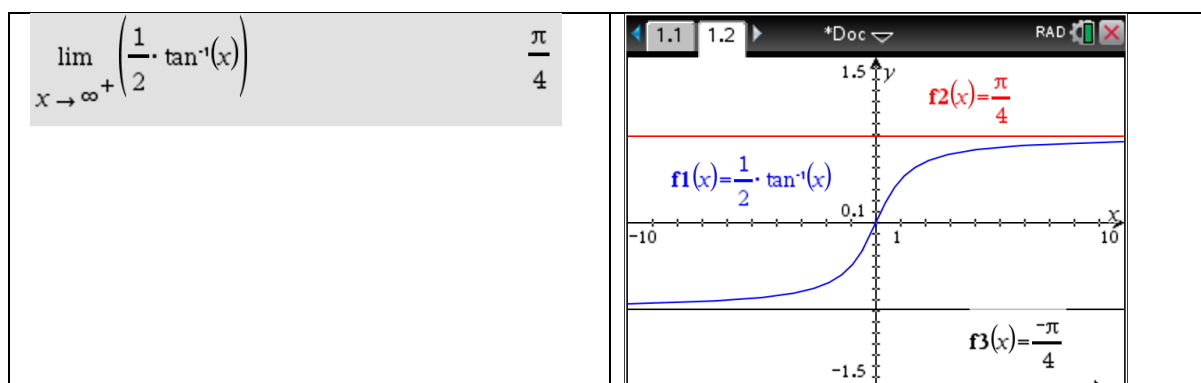


VCE SPECIALIST MATHEMATICS EXAM 2 NOV 2018 SUGGESTED SOLUTIONS

MC SECTION

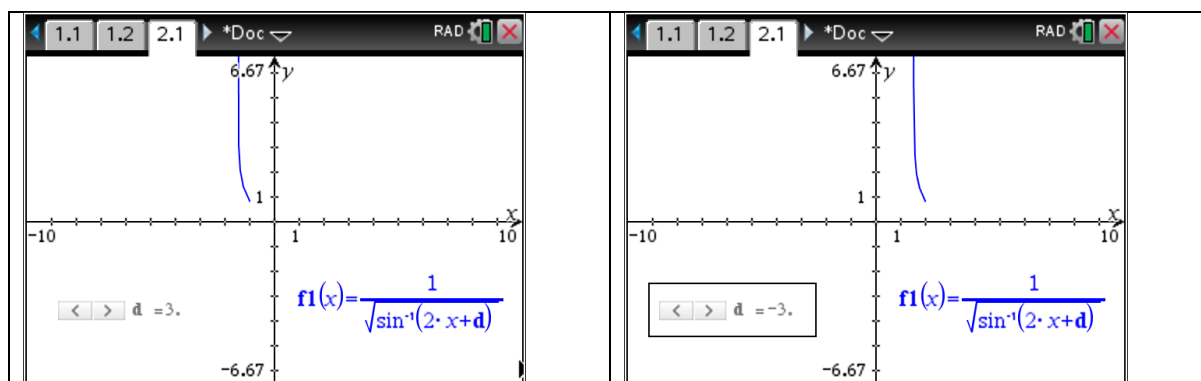
Q1



Answer: E

Q2

$$cx + d \neq 0 \rightarrow x \neq -\frac{d}{c}$$



Answer: B

Q3

Answer: D

Q4

x is in the 3rd quadrant

$$\begin{aligned} \frac{1}{\sin(-x)} &= -\frac{1}{\sin(x)} \\ &= -\frac{1}{-\frac{a}{b}} \\ &= \frac{b}{a} \end{aligned}$$

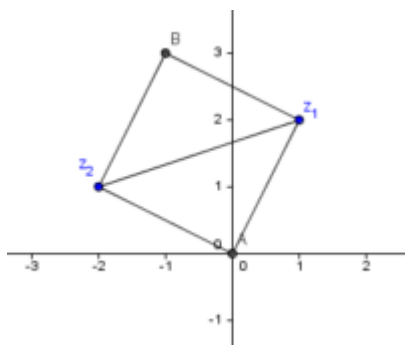
Answer: A

Q5

Circle radius 1 as $b \neq 0$ so $|z| = 1$

Answer: D

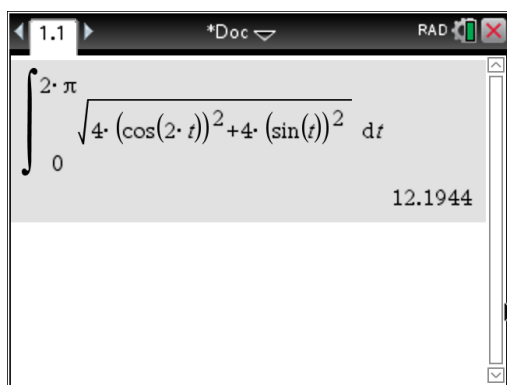
Q6



$$\text{Area} = \frac{1}{2} |z| \times |z| \times \sin(90) = \frac{|z|^2}{2}$$

Answer: C

Q7



Answer: C

Q8

$$u = \tan(x)$$

$$\frac{du}{dx} = \sec^2(x)$$

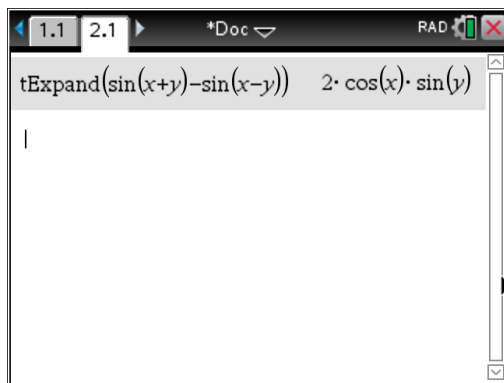
$$\text{limits : } x = 0, \quad u = 0$$

$$x = \frac{\pi}{6}, \quad u = \frac{1}{\sqrt{3}}$$

$$\int_0^{\frac{1}{\sqrt{3}}} u^2 du$$

Answer: E

Q9



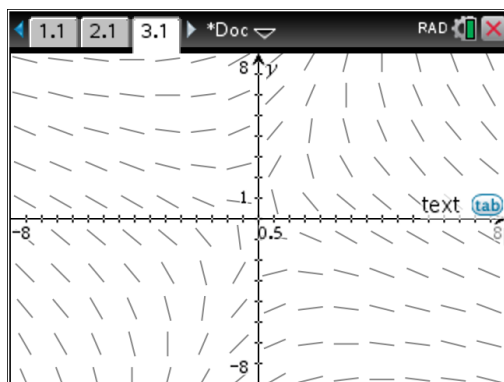
$$\frac{dy}{dx} = \frac{2}{2 \cos(x) \sin(y)}$$

$$\int \sin(y) dy = \int \frac{dx}{\cos(x)}$$

$$\int \sin(y) dy = \int \sec(x) dx$$

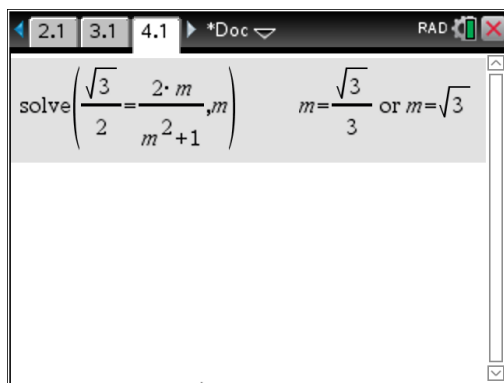
Answer: D

Q10



Answer: A

Q11

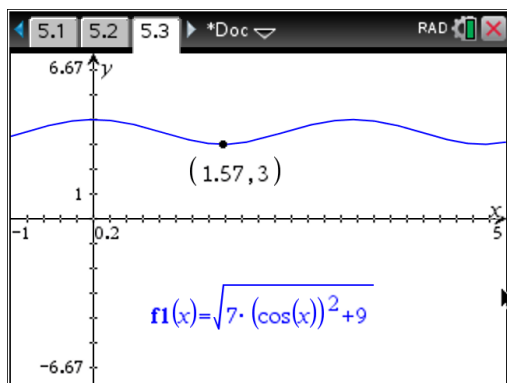


Answer: C

Q12

Answer: A

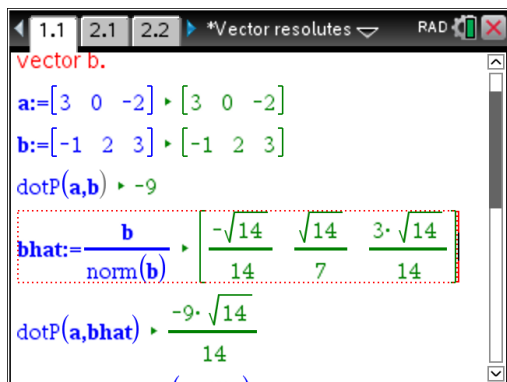
Q13



Answer: B

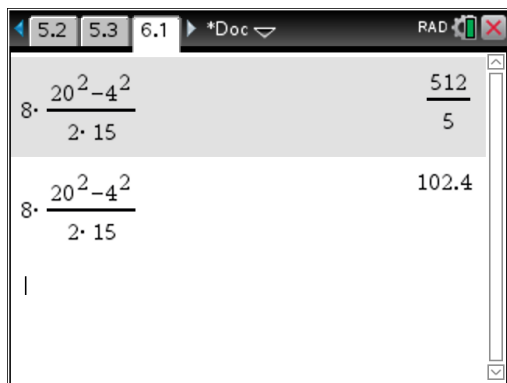
Q14

Notes pages



Answer: C

Q15



Answer: E

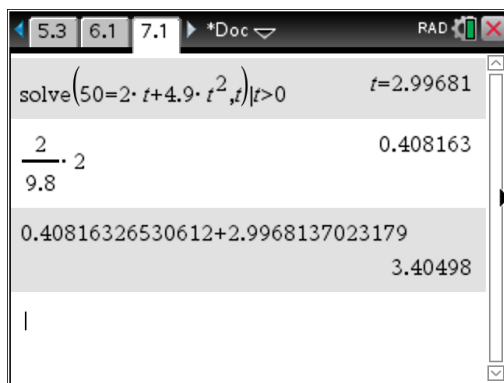
Q16

$$4 + 1.5 = F_2 \times \frac{1}{\sqrt{2}}$$

$$F_2 = \frac{11\sqrt{2}}{2}$$

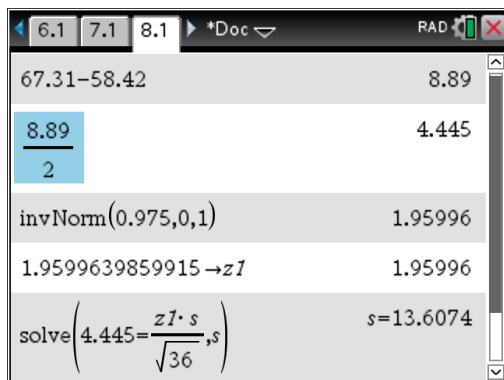
Answer: B

Q17



Answer: E

Q18



Answer: D

Q19

$$\text{normCdf}\left(5.65, \infty, 5.66, \sqrt{\frac{5 \cdot 16}{9}}\right) \quad 0.953234$$

Answer: E

Q20

$$\Pr(M > S) = \Pr(M - S > 0)$$

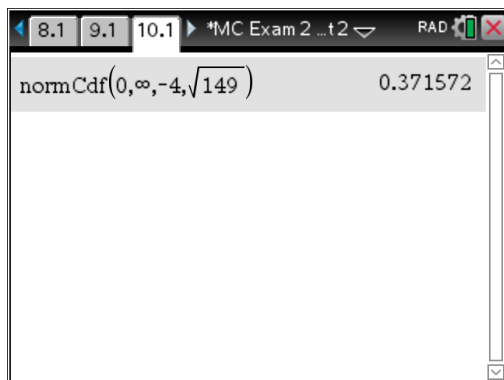
$$M \sim N(71, 10^2)$$

$$S \sim N(75, 7^2)$$

$$E(M - S) = -4$$

$$\text{Var}(M - S) = 1 \times 10^2 + 1 \times 7^2 = 149$$

$$\text{SD}(M - S) = \sqrt{149}$$



The screenshot shows a TI-84 Plus calculator screen. The top status bar displays '8.1 9.1 10.1' and '*MC Exam 2 ...t2'. The main screen shows the function $\text{normCdf}(0, \infty, -4, \sqrt{149})$ being calculated, resulting in the value 0.371572. The mode is set to RAD.

Answer: B