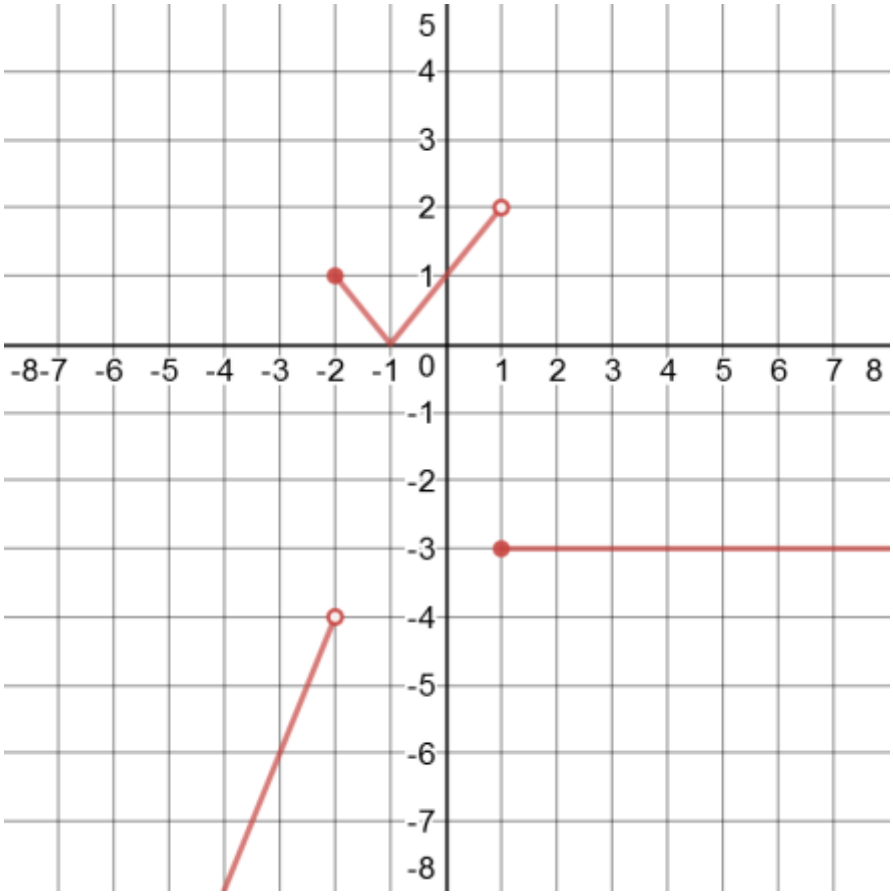
# Winter 2018 Final Exam Answer Key

1) (a) $-1$

(b) $g^{-1}(x)=\dfrac{3x+5}{2}$

2)




3) $D=[2,7)\cup(7,17)$

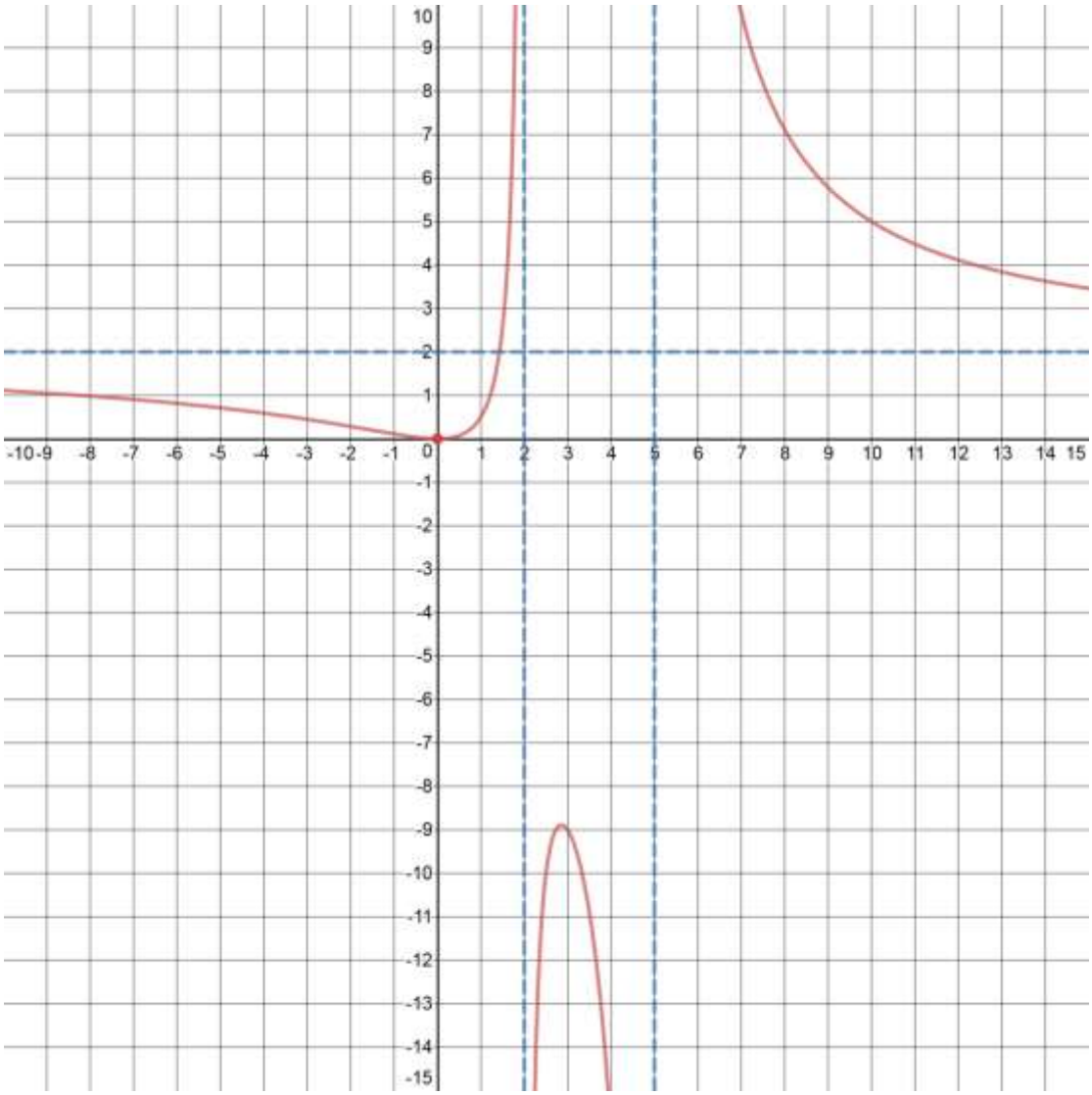
4) $\dfrac{3}{a(a+h)}$

5) $\pm\sqrt{2},\ \dfrac{1\pm i\sqrt{3}}{2}$

6) (a) $V(l) = 20l - 2l^2$

(b) $50\ ft^3$

7)



8) $x = -2$

9) (a) $\frac{9}{8}$

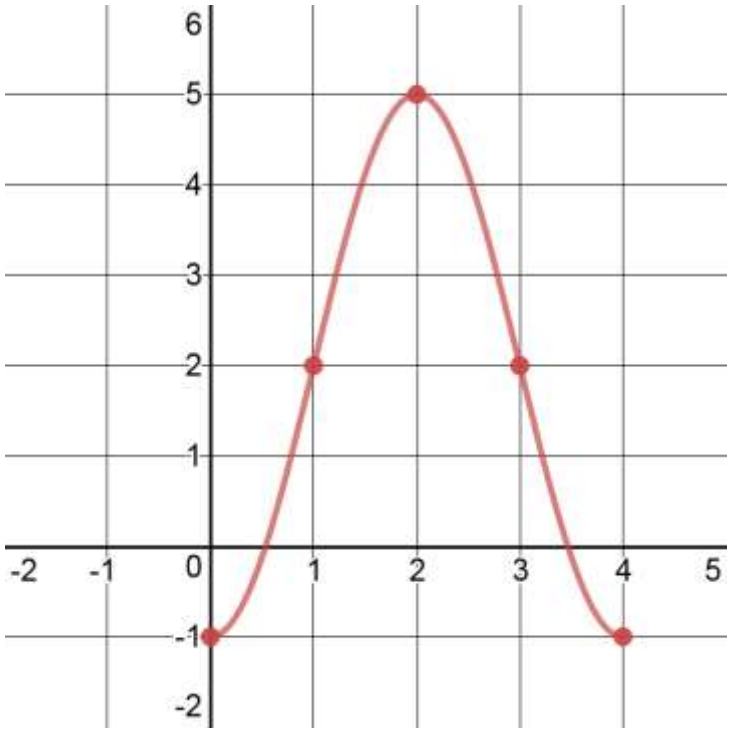
(b) $\frac{1}{25}$

10) 39 hours

11) (a) $-\frac{2}{\sqrt{3}}$ (b) $-\frac{\pi}{4}$ (c) $\frac{\sqrt{2}}{2}$

12) $-\frac{29}{13\sqrt{5}}$

13) The points plotted are $(0,-1),(1,2),(2,5),(3,2),(4,-1)$



14)

$$\begin{aligned} LHS &= \frac{2\sin x + \sin(2x)}{2} \\ &= \frac{2\sin x + 2\sin x\cos x}{2} \\ &= \sin x + \sin x\cos x \\ &= \frac{\sin x(1+\cos x)}{1} \cdot \frac{1-\cos x}{1-\cos x} \\ &= \frac{\sin x(1-\cos^2 x)}{1-\cos x} \\ &= \frac{\sin x(\sin^2 x)}{1-\cos x} \\ &= \frac{\sin^3 x}{1-\cos x} = RHS \end{aligned}$$

15) $\theta = \frac{\pi}{6} + 2k\pi, \frac{5\pi}{6} + 2k\pi$

16) $b = \frac{50\tan(22^\circ)}{\tan(27^\circ) - \tan(22^\circ)}$