Question 7

7a.

$$\frac{x^2}{2} + y^2 = 8$$

$$y^2 = -\frac{x^2}{2} + 8$$

$$V = \pi \int y^2 \, dx$$

$$= \pi \int -\frac{x^2}{2} + 8 \, dx$$

$$= \pi \left[\frac{x^3}{3} - 8x \right] + C$$

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7bi $P = \dfrac{\text{possible outcomes}}{\text{total outcomes}}$

$= \dfrac{}{0.75}$

7bii $\frac{1}{50}$

7c $x = \frac{t-2}{t+2}$

i. when $t=0$

$x = \frac{-2}{2}$

$= -1$

when $t=0$, displacement $= -1$

7cii. $x = 1 - \frac{4}{t+2}$

velocity $= f'(t)$

$=$

7ciii no

7(iv) $-1 < x < 1$