2)

A weight of mass $m = 0.45$ kg hangs from spring of force const $k = 15$ N/m.

The angular freq of oscillation is

$$\omega = \sqrt{\frac{k}{m}} = 5.77 \frac{\text{rad}}{\text{s}}$$

Fred records the motion of the system. At time $t = 0$, he measures

$$y(t=0) = -0.15 \text{ m}$$
$$v_y(t=0) = -1.1 \text{ m/s}$$

If we adopt

$$y(t) = A\cos(\omega t + \phi)$$

then

$$y(0) = A\cos\phi = -0.15 \text{ m}$$
$$v_y(0) = -\omega A \sin\phi = -1.1 \text{ m/s}$$

Two equations, two unknowns. Divide $y(0)$ by $v_y(0)$

$$\frac{A\cos\phi = -0.15 \text{ m}}{-\omega A \sin\phi = -1.1 \text{ m/s}}$$

$$-\frac{1}{\omega}\frac{1}{\tan\phi} = 0.136 \text{ s}$$

$$\tan\phi = -\frac{1}{(0.136\text{s})(5.77 \text{ rad/s})} = -1.274$$

$$\phi = -0.91 \text{ rad} + \pi \text{ rad} = +2.236 \text{ rad}$$

↑ in proper quadrant

Then plug in to find A

$$A = \frac{-0.15 \text{ m}}{\cos(2.236 \text{ rad})} = 0.244 \text{ m}$$