

## PS 11 Selected Answers

$$\textcircled{2} \text{ (a) } \nabla h(x, t) = \langle \pi e^{-3t} \cos(\pi x + 5t), e^{-3t} (-3 \sin(\pi x + 5t) + 5 \cos(\pi x + 5t)) \rangle$$

$$\text{(b) } \nabla g(x, y) = \langle z^x \sec(x^2 y) (\ln(z) + z \tan(x^2 y) xy), z^x z \sec(x^2 y) \tan(x^2 y) \rangle$$

$$\text{(c) } \nabla F(m, r) = \left\langle \frac{G}{r^2}, -\frac{2Gm}{r^3} \right\rangle$$

$$\textcircled{4} \frac{\partial h}{\partial x} = \frac{\partial h}{\partial y} = 0 \text{ at } \left( \frac{3}{2}, \pm \sqrt{2} \right)$$

$$\textcircled{5} \text{ Approximately } \frac{17\pi}{1920} \text{ sec.}$$