

Correct. You need to find t when $16 = -16t^2 + 52t + 4$, or $16t^2 - 52t + 12 = 0$.

Divide both sides by 4: $4t^2 - 13t + 3 = 0$

Use the Quadratic Formula: $t = \frac{-(-13) \pm \sqrt{(-13)^2 - 4 \cdot 4 \cdot 3}}{2 \cdot 4}$

This simplifies to: $t = \frac{13 \pm \sqrt{121}}{8} = \frac{13 \pm 11}{8} = 3$ or $\frac{1}{4}$

The ball is 16 feet high and going up when $t = \frac{1}{4}$. It is coming down when $t = 3$.