

Graphing Polynomials

Use the calculator to graph the following equations. Sketch each situation

(1) Graph $Y = AX^2$ with values of A greater than 1, $A = 2$, $A = 3$, $A = 4$, $A = 5$. What happens as the value of A gets bigger?

(2) Graph $Y = AX^2$ with values of A smaller than 1, $A = 0.5$, $A = 0.6$, $A = 0.1$, $A = 0.01$. What happens as the value of A gets smaller?

(3) Shifting of graphs to the sides: Graph $Y_1 = X^2$, $Y_2 = (X - 1)^2$, $Y_3 = (X + 3)^2$, and $Y_4 = (X - 5)^2$. Find the vertex of Y_1 , Y_2 , Y_3 , and Y_4 .

(4) Shifting of graphs up and down: Graph $Y_1 = X^2$, $Y_2 = X^2 - 1$, $Y_3 = X^2 + 3$, and $Y_4 = X^2 - 5$. Find the vertices of Y_1 , Y_2 , Y_3 , and Y_4 .

(5) Combining (3) and (4) Graph $Y_1 = X^2$, $Y_2 = (X - 1)^2 - 2$, $Y_3 = (X + 3)^2 + 5$, and $Y_4 = (X - 5)^2 - 7$. Find the vertices of Y_1 , Y_2 , Y_3 , and Y_4 .

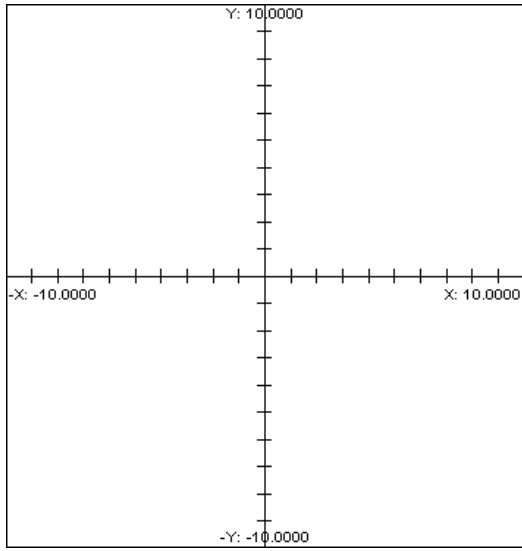
(6) A soccer ball is kicked from the origin and follows a parabolic path. The equation of path is given as

$$Y = -\frac{1}{10}(X - 9)^2 + 8.$$

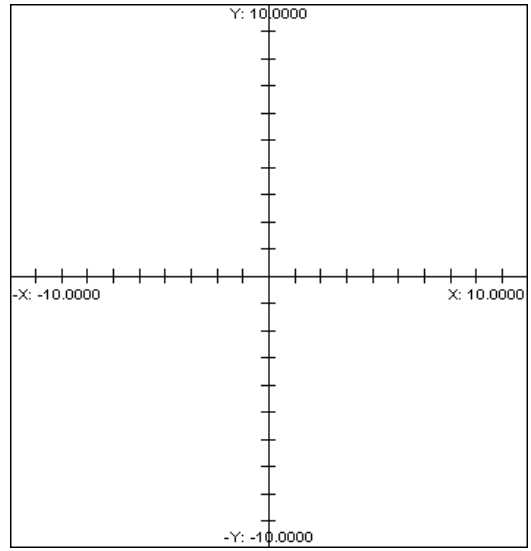
(a) What is the maximum height that the ball reaches?

(b) When does the ball reach the ground?

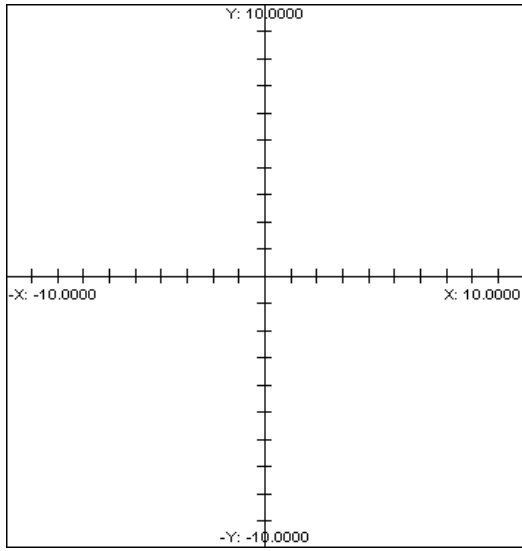
(1)



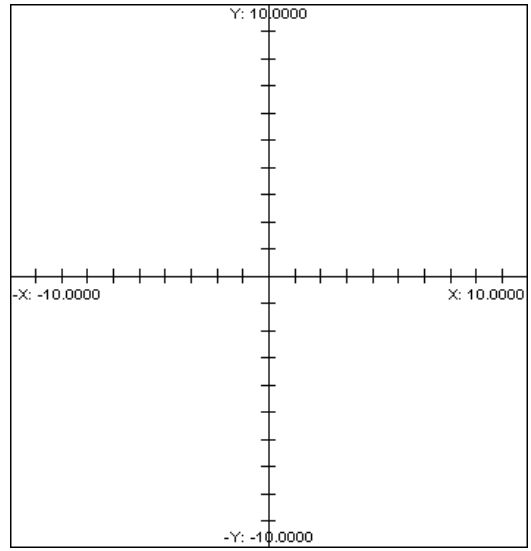
(4)



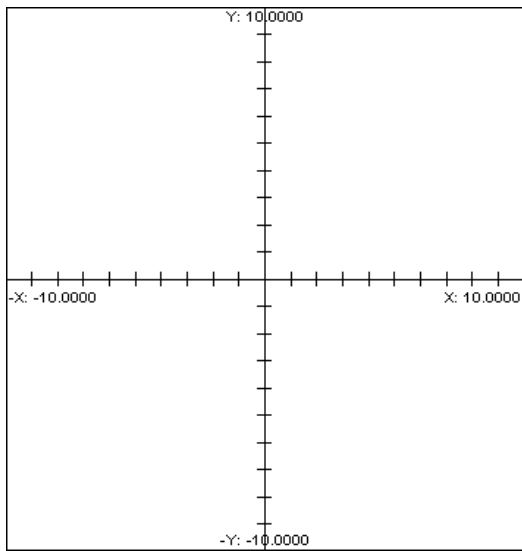
(2)



(5)



(3)



(6)

