

(A) VERTEX = (h, k)

$$h = -\frac{b}{2a} = -\frac{5512}{2(-0.03084)} = 56.939$$

$$k = f(h) = 0.03084(56.939)^2 - 5512(56.939) + 0.04516$$
$$k = 10.0437$$

$$\text{VERTEX} = (56.939, 10.0437)$$

THE CONSUMPTION OF NUCLEAR POWER IN THE US WILL BE MAXIMUM IN 1970 + 57 = 2027 WHEN IT WILL BE 10.0437 QUADRILLION BTUs

(B) HORIZONTAL INTERCEPT OCCURS WHEN $f(t) = 0$

WE WILL USE THE QUADRATIC EQUATION

$$t_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-3512 \pm \sqrt{3512^2 - 4(-0.03084)(0.04516)}}{2(-0.03084)}$$

$$\frac{-3512 \pm 3519.9}{-0.06168}$$

$$t_2 = -1284, 114.007$$

$$(114.007, 0)$$

SINCE WE CANNOT HAVE A NEGATIVE YEAR, THE HORIZONTAL INTERCEPT IS THIS MEANS THAT AFTER 114.007 YEARS THE CONSUMPTION OF NUCLEAR POWER IN THE US