

## 17.7 1)

Είναι

$$E_{\text{τετραγώνου}} = \alpha^2 \xrightarrow{\delta=\alpha\sqrt{2} \Rightarrow \alpha=\frac{\delta}{\sqrt{2}}} E(\delta) = \left(\frac{\delta}{\sqrt{2}}\right)^2 \Rightarrow E(\delta) = \frac{\delta^2}{2} \xrightarrow{\text{παραγωγίζουμε}} E'(\delta) = \frac{\cancel{2}\delta}{\cancel{2}} \Rightarrow$$

$$\Rightarrow E'(\delta) = \delta \xrightarrow{\text{όταν } \alpha=2 \Rightarrow \delta=2\sqrt{2}} \boxed{E'(2\sqrt{2}) = 2\sqrt{2}}$$

## 17.7 2)

Το εμβαδό τετραγώνου δίνεται από τον τύπο  $E = x^2$ . Δηλαδή  $E(x) = x^2$

Όταν το εμβαδό είναι 16 έχουμε  $E = x^2 \Rightarrow 16 = x^2 \xrightarrow{x>0} x = 4$   
οπότε

$$E(x) = x^2 \xrightarrow{\text{παραγωγίζουμε}} E'(x) = 2x \Rightarrow E'(4) = 2 \cdot 4 \Rightarrow \boxed{E'(4) = 8}$$

## 17.7 3)

Είναι

$$E_{\text{τετραγώνου}} = \alpha^2 \xrightarrow{\delta=\alpha\sqrt{2} \Rightarrow \alpha=\frac{\delta}{\sqrt{2}}} E(\delta) = \left(\frac{\delta}{\sqrt{2}}\right)^2 \Rightarrow E(\delta) = \frac{\delta^2}{2} \xrightarrow{\text{παραγωγίζουμε}} E'(\delta) = \frac{\cancel{2}\delta}{\cancel{2}} \Rightarrow$$

$$\Rightarrow E'(\delta) = \delta \xrightarrow{\delta=4} \boxed{E'(4) = 4}$$

## 17.7 4)

Είναι

$$E_{\text{τετραγώνου}} = \alpha^2 \xrightarrow{\delta=\alpha\sqrt{2} \Rightarrow \alpha=\frac{\delta}{\sqrt{2}}} E(\delta) = \left(\frac{\delta}{\sqrt{2}}\right)^2 \Rightarrow E(\delta) = \frac{\delta^2}{2} \xrightarrow{\text{παραγωγίζουμε}} E'(\delta) = \frac{\cancel{2}\delta}{\cancel{2}} \Rightarrow$$

$$\Rightarrow E'(\delta) = \delta \xrightarrow{\text{όταν } E=1 \Rightarrow \alpha^2=1 \Rightarrow \alpha=1 \Rightarrow \delta=\sqrt{2}} \boxed{E'(\sqrt{2}) = \sqrt{2}}$$

## 17.7 5)

Είναι

$$V_{\text{κύβου}} = \alpha^3 \xrightarrow{\delta=\alpha\sqrt{3} \Rightarrow \alpha=\frac{\delta}{\sqrt{3}}} V(\delta) = \left(\frac{\delta}{\sqrt{3}}\right)^3 \Rightarrow V(\delta) = \frac{\delta^3}{3\sqrt{3}} \xrightarrow{\text{παραγωγίζουμε}} V'(\delta) = \frac{\cancel{3}\delta^2}{\cancel{3}\sqrt{3}} \Rightarrow$$

$$\Rightarrow V'(9) = \frac{9^2}{\sqrt{3}} \Rightarrow V'(9) = \frac{81}{\sqrt{3}} \Rightarrow V'(9) = \frac{\cancel{81}\sqrt{3}}{\cancel{\sqrt{3}}} \Rightarrow \boxed{V'(9) = 27\sqrt{3}}$$

## 17.7 6)

Είναι

$$E_{\text{κύκλου}} = \pi R^2 \xrightarrow{L=2\pi R \Rightarrow R=\frac{L}{2\pi}} E(L) = \pi \left(\frac{L}{2\pi}\right)^2 \Rightarrow E(L) = \cancel{\pi} \frac{L^2}{4\cancel{\pi}} \xrightarrow{\text{παραγωγίζουμε}} E'(L) = \frac{2L}{4\pi} \Rightarrow$$

$$\begin{aligned} \text{όταν } R=1 \Rightarrow L=2\pi \\ \Rightarrow E'(2\pi) = \frac{2 \cdot 2\pi}{4\pi} \Rightarrow \boxed{E'(2\pi) = 1} \end{aligned}$$

**17.7 7)**

Είναι

$$E_{\text{κύκλου}} = \pi R^2 \xRightarrow{L=2\pi R \Rightarrow R=\frac{L}{2\pi}} E(L) = \pi \left( \frac{L}{2\pi} \right)^2 \Rightarrow E(L) = \cancel{\pi} \frac{L^2}{4\cancel{\pi}} \xRightarrow{\text{παραγωγίζουμε}} E'(L) = \frac{2L}{4\pi} \Rightarrow$$

$$\begin{aligned} \text{όταν } R=4 \Rightarrow L=2\pi \cdot 4=8\pi \\ \Rightarrow E'(8\pi) = \frac{2 \cdot 8\pi}{4\pi} \Rightarrow \boxed{E'(8\pi) = 4} \end{aligned}$$

**17.7 8)**

Είναι

$$L_{\text{κύκλου}} = 2\pi R \xRightarrow{E=\pi R^2 \Rightarrow R^2=\frac{E}{\pi} \Rightarrow R=\sqrt{\frac{E}{\pi}}} L(E) = 2\pi \sqrt{\frac{E}{\pi}} \Rightarrow L(E) = 2\pi \frac{\sqrt{E}}{\sqrt{\pi}} \Rightarrow$$

$$\Rightarrow L(E) = 2\sqrt{\pi} \cancel{\frac{\sqrt{E}}{\sqrt{\pi}}} \Rightarrow L(E) = 2\sqrt{\pi} \sqrt{E} \xRightarrow{\text{παραγωγίζουμε}} L'(E) = \cancel{2} \sqrt{\pi} \frac{1}{\cancel{2} \sqrt{E}} \Rightarrow$$

$$\begin{aligned} \text{όταν } R=5 \Rightarrow E=\pi \cdot 5^2=25\pi \\ \Rightarrow L'(25\pi) = \sqrt{\pi} \frac{1}{\sqrt{25\pi}} \Rightarrow L'(25\pi) = \cancel{\sqrt{\pi}} \frac{1}{5\cancel{\sqrt{\pi}}} \Rightarrow L'(25\pi) = \frac{1}{5} \end{aligned}$$

**17.7 9)**

Είναι

$$L_{\text{κύκλου}} = 2\pi R \xRightarrow{E=\pi R^2 \Rightarrow R^2=\frac{E}{\pi} \Rightarrow R=\sqrt{\frac{E}{\pi}}} L(E) = 2\pi \sqrt{\frac{E}{\pi}} \Rightarrow L(E) = 2\pi \frac{\sqrt{E}}{\sqrt{\pi}} \Rightarrow$$

$$\Rightarrow L(E) = 2\sqrt{\pi} \cancel{\frac{\sqrt{E}}{\sqrt{\pi}}} \Rightarrow L(E) = 2\sqrt{\pi} \sqrt{E} \xRightarrow{\text{παραγωγίζουμε}} L'(E) = \cancel{2} \sqrt{\pi} \frac{1}{\cancel{2} \sqrt{E}} \Rightarrow$$

$$\begin{aligned} \text{όταν } R=7 \Rightarrow E=\pi \cdot 7^2=49\pi \\ \Rightarrow L'(49\pi) = \sqrt{\pi} \frac{1}{\sqrt{49\pi}} \Rightarrow L'(49\pi) = \cancel{\sqrt{\pi}} \frac{1}{7\cancel{\sqrt{\pi}}} \Rightarrow L'(49\pi) = \frac{1}{7} \end{aligned}$$