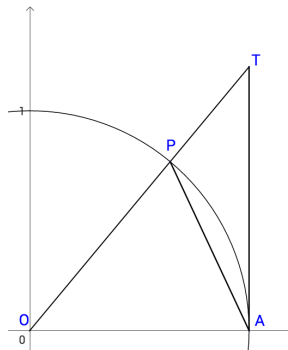


Summary.

Let outline what techniques we've encountered for evaluating limits:

Squeeze theorem.



1. The figure above represents the unit circle and a given angle t . Determine the areas of: i) the triangle OPA , ii) the area sector OPA , and iii) the triangle OTA .

2. Rank the area in increasing order (i.e. write area 1 < area 2 < area 3). Then multiply the inequalities by $\frac{2}{\sin t}$.

3. Finally take the reciprocals. What do you get? What can you conclude about $\lim_{t \rightarrow 0} \frac{\sin t}{t}$? What limit laws or theorem have you used?

Computation.

Using the previous result. Compute the limits:

i. $\lim_{x \rightarrow 0} \frac{\sin(x^2)}{x^2}$

ii. $\lim_{x \rightarrow 0} \frac{\sin(2x)}{x}$

iii. $\lim_{x \rightarrow 0} \frac{\sin(x^2)}{x}$