

## Chapter 10 WIR- Last WIR of Fall 2022

**Problem 1.** Sketch the curve traced out by  $x = 6 \cos t$ ,  $y = 7 \sin t$ ,  $0 \leq t \leq 2\pi$ .

**Problem 2.** Find the length of  $x = 6t - 2t^3$ ,  $y = 6t^2$  for  $0 \leq t \leq 1$ .

**Problem 3.** Find the length of  $x = 6t - 2t^3$ ,  $y = 6t^2$  from  $(-4, 6)$  to  $(4, 6)$ .

**Problem 4.** Find the length of  $x = e^{2t} + e^{-2t}$ ,  $y = 5 - 4t$  for  $0 \leq t \leq 1$ .

**Problem 5.** Find the length of  $x = a + e^{2t} + e^{-2t}$ ,  $y = b - 4t$  for  $0 \leq t \leq 1$  for any real numbers  $a$  and  $b$ .

**Problem 6.** Find the cartesian coordinates for  $(1, \pi)$ ,  $(2, 2\pi)$ ,  $(3, \frac{\pi}{4})$ ,  $(1, \frac{\pi}{6})$ .

**Problem 7.** Find the polar coordinates for  $(1, -1)$  and  $(-1, \sqrt{32})$ .

**Problem 8.** Find a cartesian equation for  $r = 2 \cos \theta$ .

**Problem 9.** Find the area of the region contained in the above curve corresponding to  $0 \leq \theta \leq \frac{\pi}{6}$ .

**Problem 10.** Find the area inside  $r = 2 - 2 \sin \theta$  but outside  $r = 2$ .

**Problem 11.** Sketch  $r = \sin 6\theta$ .

**Problem 12.** Find the area in one loop of  $r = \sin 6\theta$ .

**Problem 13.** Sketch  $r = \cos 8\theta$ .

**Problem 14.** Find the area in one loop of  $r = \cos 8\theta$ .



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Math 152 – Fall 2022  
“Week-in-Review”

It is okay to use calculator for problem 15, however some intuition, along with basic trigonometry should be enough.

**Problem 15.** Sketch  $r = 10 \cos 12\theta$ .

**Problem 16.** Find the area in one loop of  $r = 10 \cos 12\theta$ .