

MATH 1151 MIDTERM EXAM (I), SPRING 2001

Name _____ Discussion Section _____

ID _____

(1) (15 points)

Find the exact value of $\sin(\theta)$ and $\tan(\theta)$ for the angle θ which verifies

$$\sec(\theta) = -5/3, \quad \tan(\theta) < 0.$$

(2) (24 points, 12 points each)

Find the exact value of the following expressions

a) $6 \cos\left(\frac{3\pi}{4}\right) + 2 \tan\left(-\frac{10\pi}{3}\right)$; b) $\sin^2(25^\circ) + \sin^2(-65^\circ)$.

(3) (18 points)

Let θ be an acute angle such that $\sin(\theta) = 3/4$ and $\cos(\theta) = \sqrt{7}/4$. Find the exact value of

$$\sin(\theta + \pi/2); \quad \sin(\theta + \pi); \quad \sin(\theta + 2\pi).$$

(4) (16 points)

What is the angular velocity of the minute hand of a clock? If the minute hand is 2 inches long, how far does its tip move in 20 minutes?

(5) (27 points)

Find the amplitude, period and phase shift of the function

$$y = 3 \sin(2x + \pi/2).$$

Graph this function over two periods.