

\* This is longer than the actual exam. \*

## Practice Exam 3

①

① Solve for  $x$

a)  $\log_5(x) = 2$

b)  $\log_5(x) - \log_5(x+1) = 2$

② Simplify the expression

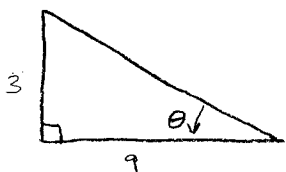
$$\log_5 20 - \log_5 4$$

③ Expand. Make sure that there are no logarithms of products, quotients or powers

a)  $\ln \left( \frac{(x+1)^2}{\sqrt{x-3}} \right)$

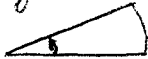
b)  $\log_6(x^2\sqrt{x})$

④

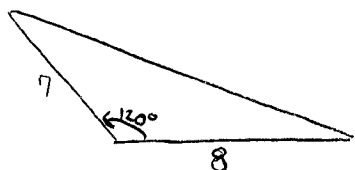


Find  $\sin\theta$ ,  $\cos\theta$ ,  $\tan\theta$ ,  $\sec\theta$ ,  $\csc\theta$ ,  $\cot\theta$

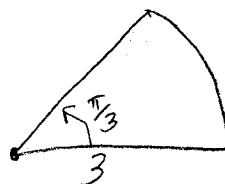
⑤ Verify that  $\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ = 1$ .

⑥ Find the area of the following shapes given that the area of a triangle is given by  $A = \frac{1}{2} ab \sin\theta$  and the area of the sector  of a circle is  $A = \frac{1}{2} r^2 \theta$

a)



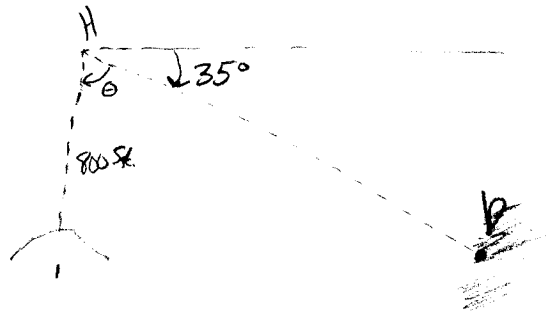
b)



# Practice From 3

2

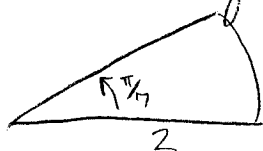
- ⑦ A helicopter hovers 800 ft directly above a small island that is off the California coast. From the helicopter the pilot takes a sighting to a point P directly ashore on the mainland, at the water's edge. If the angle of depression is  $35^\circ$ , how far off of the coast is the island?



- ⑧ Evaluate each expression

- $\tan(0)$
- $\sin(0)$
- $\cos(60^\circ)$
- $\sin(\pi/3)$
- $\sin(300^\circ)$
- $\tan(405^\circ)$
- $\sec(4\pi/3)$
- $\cos(-5\pi/3)$
- $\sin(5\pi/4)$
- $\sin(11\pi/4)$

- ⑨ Find the arc length



# Practice Exam 3

3

10 Simplify (Hint: use identities).

a)  $\frac{\sin \theta (\csc^2 \theta - \cot^2 \theta)}{\tan \theta}$

b)  $\sin \theta + \sin \theta \tan^2 \theta$