Math 142 (Sections 4 – 6) **Test 2** **February 19, 2004**

Name _____

No calculators allowed!

1. (10 points each) Evaluate the following integrals. Circle your final answer!

   (a) $\int \frac{x^2 + 9}{x}\, dx$

   (b) $\int \frac{6x^2}{x^3 + 5}\, dx$

(c) $\int 6xe^{(4-x^2)}\ dx$

(d) $\int \tan^2 x\ dx$

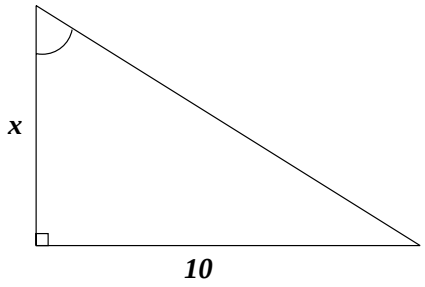
(e) $\int \cos^3 x \; dx$

(f) $\int \frac{6x}{\sqrt{1-x^4}} \; dx$

(g) $\int \frac{6}{1+4x^2}\, dx$

(h) $\int xe^{2x}\, dx$

2. (7 points) Use any inverse trigonometric function to express θ in terms of x based upon the triangle shown.



3. (7 points) Find the exact value of $\arcsin\left(-\frac{\sqrt{2}}{2}\right)$.

4. (6 points) Simplify the quantity $\cos\left(\tan^{-1}\left(\frac{4}{3}\right)\right)$. You may write your final answer as a fraction or decimal.

BONUS PROBLEMS (3 points each!)

- Evaluate $\int \sqrt{1+\sqrt{x}}\, dx$.

- Evaluate $\int e^{2x} \ln\left(e^x - 1\right)\, dx$.