Calculus 2 Unit 1 worksheet: Trigonometric substitution

Name _____ Date _____ Period _____

1. Find $\int \frac{\sqrt{16-x^2}}{x^4}\,dx$.

2. Find $\int \frac{x^2}{(x^2+16)^{3/2}}\,dx$.

3. Find $\int \frac{dx}{(x^2-16)^{3/2}}$ for $x > 4$.

4. Find $\int \frac{dx}{(8x-x^2)^{3/2}}$ on $0 < x < 8$. Complete the square first.

5. Find $\int \frac{x}{\sqrt{x^2+8x+20}}\,dx$. Complete the square first.

6. Evaluate $\int_0^{\frac{4\sqrt{3}}{3}} \frac{dx}{(x^2+16)^{5/2}}$ with a trigonometric substitution, changing the limits to θ.

7. Show that $\int_a^{2a} \frac{\sqrt{x^2-a^2}}{x^2}\,dx$ has the same value for every $a > 0$, and find that value.

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