Homework

In the following problems use the calc tutor to help find the integrals. You can use the cheet sheets for the trigonometic integrals.

$$\int \frac{x}{x^2+1}\,dx;$$

```
> int(1/(x*ln(x^3)), x);
```

$$\int \frac{1}{x\cdot\ln(x^3)}\,dx;$$

```
> int(2*x/(x-1)^2, x);
```

$$\int \frac{2\cdot x}{(x-1)^2}\,dx;$$

```
> int(cos(x)/(1+sin(x)), x)
```

$$\int \frac{\cos(x)}{1+\sin(x)}\,dx$$

```
> int(sec(x)*tan(x)/(sec(x)-1), x)
```

$$\int \frac{\sec(x)\cdot\tan(x)}{\sec(x)-1}\,dx$$

```
> int(sec(x/2), x)
```

$$\int \sec\left(\frac{x}{2}\right)\,dx$$

```
> int(exp(3/x)/x^2, x);
```

$$\int \frac{e^{\frac{3}{x}}}{x^2}\,dx;$$

```
> # In the following use the solve command to show that the
  functions are inverses of one another. Use a plot to see
  they are inverses.
```

```
> f(x) = x^2 + 4; g(x) = sqrt(x - 4);
```

$$f(x) = x^2 + 4;\ g(x) = \sqrt{x-4};$$

```
> f(x) = 1/(1+x); g(x) = (1-x)/x;
```

$$f(x) = \frac{1}{1+x};\ g(x) = \frac{(1-x)}{x};$$

```
> # In the following use the solve to find the inverse. Plot both functions
```

```
> f(x) = x^(2/3);
```

$$f(x) = x^{\frac{2}{3}};$$

```
> f(x) = cot(x);
      # on interval (0,Pi) .. what is the domain of the inverse. How does this relate
      to graph of cot(x); can you plot cot(x);
```

$$f(x) = \cot(x);$$

 # on interval (0,Pi) .. what is the domain of the inverse. How does this relate to graph of cot(x); can you plot cot(x);

```
> # simplify sin(arctan(2 x)) ; Use Maple to see what answer should be
```

 # simplify $\sin(\arctan(2\,x))$ *; Use Maple* **to** *see what answer should be*

```
> int(7/(16+x^2), x);
      # look at substitutions and formulas for derivatives and trig identities on cheat
      sheets
```

$$\int \frac{7}{16+x^2}\,dx;$$

 # look at substitutions and formulas for derivatives and trig identities on cheat sheets

```
>
```