

> restart;

> g:=x->x-(x^7+4)/(7*x^6);

$$g := x \rightarrow x - \frac{x^7 + 4}{7x^6}$$

> x1:=-1;

$$x1 := -1$$

> x2:=g(x1);

$$x2 := \frac{-10}{7}$$

> x3:=g(x2);

$$x3 := \frac{-15823543}{12250000}$$

> x4:=g(x3);

$$x4 := \frac{-827947199198815652703184475561608547620162298964821}{673017756373471977233029646388379780668473100875000}$$

> Digits:=60;

$$\text{Digits} := 60$$

> evalf(x1); evalf(x2); evalf(x3); evalf(x4);

$$-1.$$

$$-1.42857142857142857142857142857142857142857142857142857142857142857$$

$$-1.29171779591836734693877551020408163265306122448979591836735$$

$$-1.23020112227079192718121949913643565598645349269139947035606$$

> x5:=evalf(g(x4));

$$x5 := -1.21931428698848895966253797083615322998476117959903698964283$$

> x6:=evalf(g(x5));

$$x6 := -1.21901387648418033623808478353080507544771767583521539047413$$

> x7:=evalf(g(x6));

$$x7 := -1.21901365420459703489797612859648732665582096809064338846047$$

> x8:=evalf(g(x7));

$$x8 := -1.21901365420447544091169103897877552281908820820858258608133$$

> x9:=evalf(g(x8));

$$x9 := -1.21901365420447544091169100259256085727741193585996406485624$$

> evalf(4^(1/7));

$$1.21901365420447544091169100259256085727741193585996080659097$$

```
> restart;
```

```
> y:=x^3-arctan(x);
```

$$y := x^3 - \arctan(x)$$

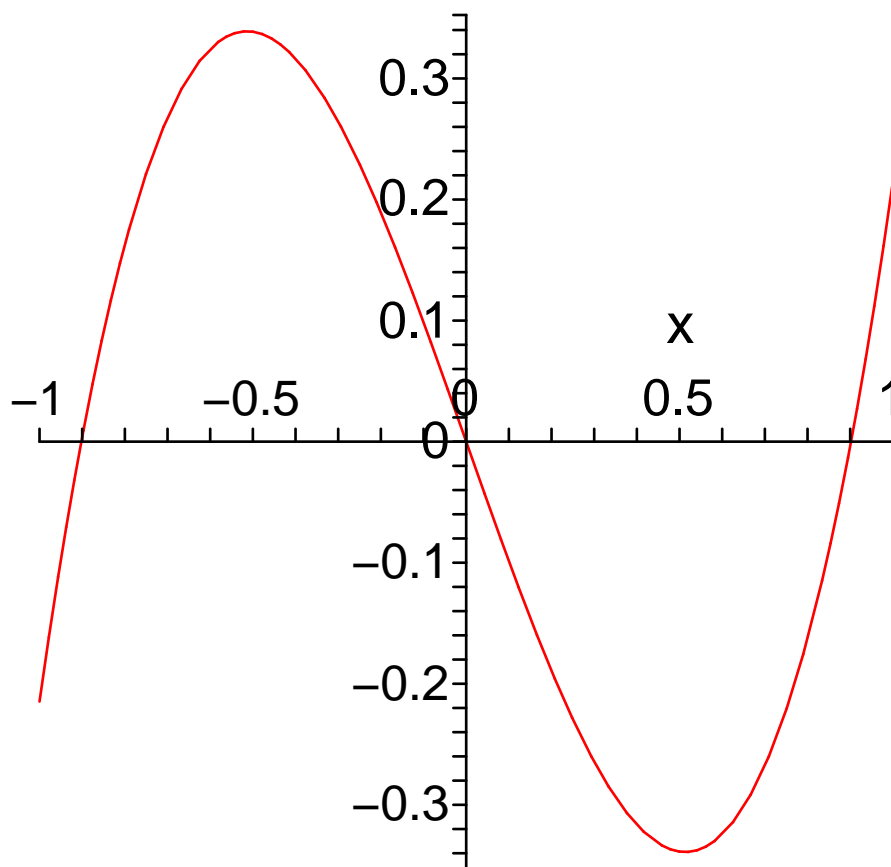
```
> dy:=diff(y,x);
```

$$dy := 3x^2 - \frac{1}{1+x^2}$$

```
> g:=unapply(x-y/dy,x);
```

$$g := x \rightarrow x - \frac{x^3 - \arctan(x)}{3x^2 - \frac{1}{1+x^2}}$$

```
> plot(y,x=-1..1);
```



```
> x1:=-1.0;
```

$$x1 := -1.0$$

> **x2:=g(x1);**

x2:= -0.9141592654

> **x3:=g(x2);**

x3:= -0.9022507732

> **x4:=g(x3);**

x4:= -0.9020255724

> **x5:=g(x4);**

x5:= -0.9020254924

> **z1:=0;**

z1:= 0

> **z2:=g(z1);**

z2:= 0

> **x1:=1.0;**

x1:= 1.0

> **x2:=g(x1);**

x2:= 0.9141592654

> **x3:=g(x2);**

x3:= 0.9022507732

> **x4:=g(x3);**

x4:= 0.9020255724

> **restart;**

> **y:=ln(x^2+2)-3*x/sqrt(x^2+1);**

$$y := \ln(x^2 + 2) - \frac{3x}{\sqrt{x^2 + 1}}$$

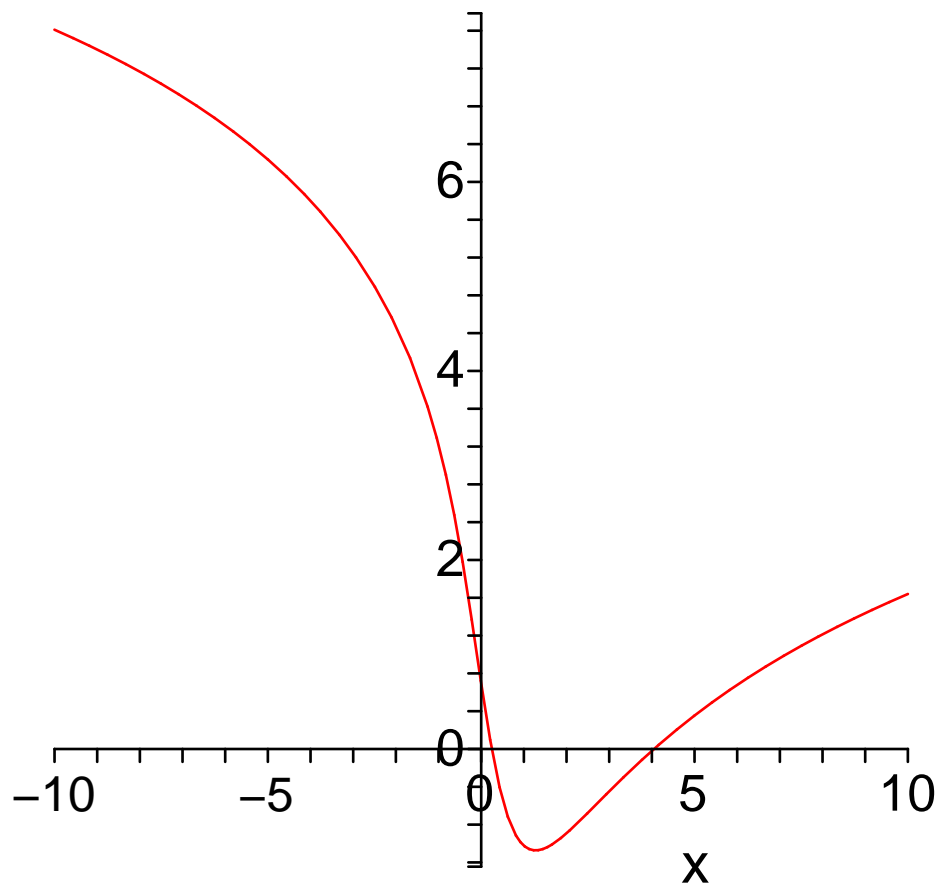
> **dy:=diff(y,x);**

$$dy := \frac{2x}{x^2 + 2} - \frac{3}{\sqrt{x^2 + 1}} + \frac{3x^2}{(x^2 + 1)^{(3/2)}}$$

> **g:=unapply(x-y/dy,x);**

$$g := x \rightarrow x - \frac{\ln(x^2 + 2) - \frac{3x}{\sqrt{x^2 + 1}}}{\frac{2x}{x^2 + 2} - \frac{3}{\sqrt{x^2 + 1}} + \frac{3x^2}{(x^2 + 1)^{(3/2)}}}$$

```
> plot(y,x=-10..10);
```



```
> x1:=4.0;
```

```
x1 := 4.0
```

```
> x2:=g(x1);
```

```
x2 := 4.049934121
```

```
> x3:=g(x2);
```

```
x3 := 4.050109834
```

```
> x4:=g(x3);
```

```
x4 := 4.050109831
```

```
> x1:=0.0;
```

```
x1 := 0.
```

```
> x2:=g(x1);
```

```
x2 := 0.2310490602
```

```
> x3:=g(x2);
```

