Integral Practice Problems. To see the solution, place the cursor on the appropriate line and press "enter":

```
> Ans1:=int((2*x^2-x+4)/(x^3+4*x),x);
```

$$Ans1 := \frac{1}{2}\ln(x^2+4) - \frac{1}{2}\arctan\left(\frac{1}{2}x\right) + \ln(x) \quad (1)$$

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> Ans2:=int(exp(2*theta)*sin(3*theta),theta);
```

$$Ans2 := -\frac{3}{13}e^{2\theta}\cos(3\theta) + \frac{2}{13}e^{2\theta}\sin(3\theta) \quad (2)$$

```
> Ans3:=int(1/(y*(2-y)),y);
```

$$Ans3 := \frac{1}{2}\ln(y) - \frac{1}{2}\ln(-2+y) \quad (3)$$

```
> Ans4:=int(t^2*cos(3*t),t);
```

$$Ans4 := \frac{1}{3}t^2\sin(3t) - \frac{2}{27}\sin(3t) + \frac{2}{9}t\cos(3t) \quad (4)$$

```
> Ans5:=int(x^3*exp(x^2),x);
```

$$Ans5 := \frac{1}{2}(-1+x^2)e^{x^2} \quad (5)$$

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> Ans6:=int(x*5^x,x);
```

$$Ans6 := \frac{(-1+x\ln(5))5^x}{\ln(5)^2} \quad (6)$$

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> Ans7:=int((x-1)/(x^2+1),x);
```

$$Ans7 := \frac{1}{2}\ln(1+x^2) - \arctan(x) \quad (7)$$

For Problem 8, Maple will give an inverse hyperbolic arc tangent. To verify your solution, here is the integral using the substitution:

```
> Ans8:=int(1/((u+1)*(u-1)),u);
```

$$Ans8 := \frac{1}{2}\ln(u-1) - \frac{1}{2}\ln(u+1) \quad (8)$$

```
> subs(u=sqrt(x+1),Ans8);
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$$\frac{1}{2}\ln\left(\sqrt{x+1}-1\right) - \frac{1}{2}\ln\left(\sqrt{x+1}+1\right) \quad (9)$$

> $Ans9 := int(y\cdot\sinh(y), y);$

$$Ans9 := y\cosh(y) - \sinh(y) \quad (10)$$

> $Ans10 := int\left(\frac{1}{x^4-x^2}, x\right);$

(11)

$$Ans10 := \frac{1}{2}\ln(x-1) - \frac{1}{2}\ln(x+1) + \frac{1}{x} \quad (11)$$

> $Ans11 := int\left(\frac{t^2}{t+4}, t\right);$

$$Ans11 := \frac{1}{2}t^2 - 4t + 16\ln(t+4) \quad (12)$$

> $Ans12 := int(\cos(\ln(x)), x);$

$$Ans12 := \frac{1}{2}\cos(\ln(x))\,x + \frac{1}{2}\sin(\ln(x))\,x \quad (13)$$

> $Ans13 := int\left(\frac{(x-1)}{x+4}, x\right);$

$$Ans13 := x - 5\ln(x+4) \quad (14)$$

> $Ans14 := int(\arctan(x), x);$

$$Ans14 := x\arctan(x) - \frac{1}{2}\ln(1+x^2) \quad (15)$$

>