1.(1 pt) Use integration by parts to evaluate the integral.

$$\int xe^{4x}dx$$

______ $+C$

2.(1 pt) $\int_0^1 x^2\sqrt[3]{e^x}\,dx =$ ______

3.(1 pt) Use integration by parts to evaluate the integral.

$$\int 2x\sin(x)dx$$

4.(1 pt) Use integration by parts to evaluate the integral.

$$\int 4x\cos(2x)dx$$

______ $+C$

5.(1 pt) Use integration by parts to evaluate the integral.

$$\int 3x\ln(2x)\,dx$$

______ $+C$

6.(1 pt) Use integration by parts to evaluate the integral.

$$\int 64x^2\cos(4x)dx$$

______ $+C$

7.(1 pt) Use integration by parts to evaluate the integral.

$$\int (\ln(5x))^2 dx$$

______ $+C$

8.(1 pt) Evaluate the indefinite integral.

$$\int e^{2x}\sin(7x)dx$$

9.(1 pt) Use integration by parts to evaluate the definite integral.

$$\int_1^e 5t^2\ln t\,dt$$

10.(1 pt) Evaluate the definite integral.

$$\int_2^5 t^2\ln(3t)dt$$

11.(1 pt) Evaluate the definite integral.

$$\int_0^3 te^{-t}dt$$

12.(1 pt) Use integration by parts to evaluate the integral.

$$\int_1^4 \sqrt{t}\ln t\,dt$$

13.(1 pt) $\int 2y\tan^{-1}(8y)\,dy =$

______ $+C$

Use arctan() to denote $\tan^{-1}()$ in your answer.

14.(1 pt) Evaluate the indefinite integral.

$$\int x\arctan(2x)dx$$

[NOTE: Remember to enter all necessary (and) !!
Enter arctan(x) for $\tan^{-1}x$, arcsin(x) for $\sin^{-1}x$.]

15.(1 pt) Evaluate the indefinite integral.

$$\int x\cos^2(6x)dx$$

16.(1 pt) First make a substitution and then use integration by parts to evaluate the integral.

$$\int x^3\cos(x^2)dx$$

______ $+C$

17.(1 pt) Evaluate the indefinite integral.

$$\int \ln(x^2+10x+21)dx$$

18.(1 pt) A particle that moves along a straight line has velocity

$$v(t)=t^2e^{-2t}$$

meters per second after t seconds. How many meters will it travel during the first t seconds?

19.(1 pt) **Note:** You can get full credit for this problem by just entering the final answer (to the last question) correctly. The initial questions are meant as hints towards the final answer and also allow you the opportunity to get partial credit.

Consider the definite integral $\int_0^{1/5} x\sin^{-1}(5x)\,dx$

The first step in evaluating this integral is to apply integration by parts:

$$\int u\,dv = uv - \int v\,du$$

where
$u =$ ______
and $dv = h(x)\,dx$ where $h(x) =$ ______
Note: Use $\arcsin(x)$ for $\sin^{-1}(x)$.

After integrating by parts, we obtain the integral $\int_0^{1/5} v\,du = \int_0^{1/5} f(x)\,dx$ on the right hand side where
$f(x) =$ ______
The most appropriate substitution to simplify this integral is $x=g(t)$ where
$g(t) =$ ______
Note: We are using t as variable for angles instead of θ, since there is no standard way to type θ on a computer keyboard.

After making this substitution and simplifying (using trig identities), we obtain the integral $\int_a^b k(t)\,dt$ where
$k(t) =$ ______
$a =$ ______
$b =$ ______

After evaluating this integral and plugging back into the integration by parts formula we obtain:

$\int_0^{1/5} x \sin^{-1}(5x)\, dx =$ ______