1. (1 pt) Evaluate the following expressions. Your answer must be an angle $-\pi/2 \leq \theta \leq \pi$ in radians. Give exact answers; do not use decimal answers. You can enter the number π as *pi* . E.g. if the answer is $\pi/2$ you could enter pi/2 or 1/2*pi.

$\sin^{-1}(\frac{\sqrt{2}}{2})$ = _____

$\sin^{-1}(\frac{1}{2})$= _____
$\cos^{-1}(-\frac{1}{2})$= _____
$\cos^{-1}(\frac{1}{2})$= _____

Answer(s) submitted:

- (pi/4)
- (pi/6)
- ((2pi)/3)
- (pi/3)

(correct)
Correct Answers:

- pi/4
- pi/6
- 2pi/3
- pi/3

2. (1 pt) Evaluate the following expressions. Your answer must be an angle in radians and in the interval $[-\pi/2, \pi/2]$. Give exact answers; do not use decimal answers. You can enter the number π as *pi* . E.g. if the answer is $\pi/2$ you could enter pi/2 or 1/2*pi.

$\tan^{-1}(\frac{\sqrt{3}}{3}) =$ _____
$\tan^{-1}(-\sqrt{3}) =$ _____
$\tan^{-1}(0) =$ _____

Answer(s) submitted:

- (pi/6)
- -(pi/3)
- 0

(correct)
Correct Answers:

- pi/6
- -pi/3
- 0

3. (1 pt) Rewrite the expression as an algebraic expresion in x:
$\tan(\sin^{-1} x) =$ _____.

Note: by *algebraic* , we mean that the answer is not allowed to use trig functions, or inverse trig functions. It is allowed to involve polynomials, quotients, and roots.

Answer(s) submitted:

- (x)/(sqrt(1-(x^2)))

(correct)
Correct Answers:

- x/[sqrt(1-x*x)]

4. (1 pt) If $f(x) = 3x\arcsin(x)$, find $f'(x)$.

Find $f'(0.7)$.

Answer(s) submitted:

- 3((x/sqrt(1-(x^2))) + (sin^-1(x)))
- 5.26678

(correct)
Correct Answers:

- 3*arcsin(x) + 3*x/sqrt(1-x^2)
- 5.26678066629108

5. (1 pt) Let

$$f(x) = 2\sin^{-1}(x^3)$$

$f'(x) =$ _____
Answer(s) submitted:

- (6(x^2))/(sqrt(1 - (x^6)))

(correct)
Correct Answers:

- 2*3*x**(3-1)*(1-x**(2*3))**(-.5)

6. (1 pt) If $f(x) = 7\arctan(2x)$, find $f'(x)$.

Find $f'(3)$.

Answer(s) submitted:

- (14/(4(x^2) + 1))
- 14/37

(correct)
Correct Answers:

- 14/(1+4*x^2)
- 0.378378378378378

7. (1 pt) Let

$$f(x) = x^4 \tan^{-1}(7x)$$

$f'(x) =$ _____

NOTE: The WeBWorK system will accept $\arctan(x)$ but not $\tan^{-1}(x)$ as the inverse of $\tan(x)$.

Answer(s) submitted:

- `(x^3)(((7x)/(49(x^2)+1)) + 4arctan(7x))`

(correct)

Correct Answers:

- `4*x**(4-1)*arctan(7*x) + x**4*7/(1+7*7*x**2)`

8. (1 pt) Let

$$f(x) = \tan^{-1}(2^x)$$

$f'(x) =$ _____

Answer(s) submitted:

- `((2^x)ln(2))/((4^x) + 1)`

(correct)

Correct Answers:

- `2^x*ln(2)/(1+2^(2*x))`

9. (1 pt) If $f(x) = 8x^4 \arctan(9x^3)$, find $f'(x)$.

_____

Answer(s) submitted:

- `(216(x^6))/((81(x^6) + 1)) + ((32x^3)tan^-1(9x^3))`

(correct)

Correct Answers:

- `8*4*x**(4-1)*arctan(9*x**3) + 8*x**4*9*3*x**(3-1)/(1+9*9*x**(2*3))`

10. (1 pt) If $f(x) = 6\tan^{-1}(4\sin(3x))$, find $f'(x)$.

_____

Answer(s) submitted:

- `(72cos(3x))/(9-8cos(6x))`

(correct)

Correct Answers:

- `6*1/(1+[4*sin(3*x)]^2)*4*3*cos(3*x)`

11. (1 pt) If $f(x) = \arcsin^3(8x+8)$, then $f'(x) =$ _____

Note: The inverse of $\sin(x)$ can be entered as $\arcsin(x)$ or $\text{asin}(x)$

Answer(s) submitted:

- `((24)(sin^-1(8x+8)^2))/(sqrt(1-(64(x+1)^2)))`

(correct)

Correct Answers:

- `8*3*arcsin(8 x+ 8 )^(3 - 1)/sqrt(1 - (8 x+ 8 )^2)`