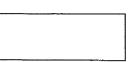
(d) $y = [\ln(1 + e^x)]^2$

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problem. Correct answers with 5. Credit for each problem is given	oxes provided. ork to justify all answers unless otherwise state the inconsistent work may not be given credit ven in parentheses in the left hand margin. or any electronic devices may be used on this	
1. Find the derivatives of the fo	ollowing functions. (It is not necessary to sim	plify).
1. Find the derivatives of the form (a) $y = \sqrt[4]{1 + 2x + x^3}$	ollowing functions. (It is not necessary to sim	plify).
(a) $y = \sqrt[4]{1 + 2x + x^3}$	ollowing functions. (It is not necessary to sim	plify).
	ollowing functions. (It is not necessary to sim	plify).
(a) $y = \sqrt[4]{1 + 2x + x^3}$	ollowing functions. (It is not necessary to sim	plify).

- (6) 2. The position function of a particle is given by $s = t^3 (4.5)t^2 7t$, $t \ge 0$.
 - (a) When does the particle reach a velocity of 5 m/sec?



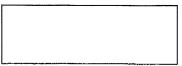
(b) When is the acceleration 0?



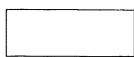
(6) 3. Find $\frac{dy}{dx}$ by implicit differentiation, if $\sin x + \cos y = \sin x \cos y$.



(8) 4. Find the equation of the tangent line to the curve $x^2 + 2xy - y^2 + x = 2$ at the point (1, 2).



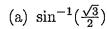
(6) 5. Use a linear approximation to estimate $e^{-0.015}$.

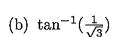


(5) 6. Find the differential dy of $y = \ln(\sec x + \tan x)$.

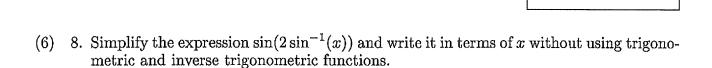
dy =

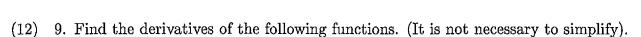
(9) 7. Find the exact value (in radians) of



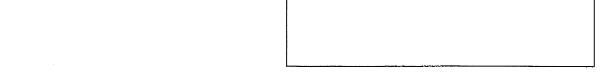


(c)	ein-	$^{-1}(\sin$	$\frac{7\pi}{}$
(c)	sın	$^{-}(\sin$	3

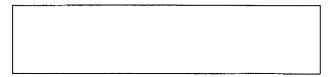




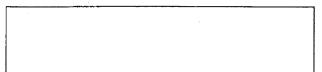
(a)
$$y = \sin^{-1}(\sqrt{\sin x})$$



(b)
$$y = \tan^{-1}(\sin^{-1}(\sqrt{x}))$$



(c)
$$y = x^{x \ln x}$$



(13) 10. Gravel is being dumped from a conveyer belt at a rate of 30 ft³/min, and its coarseness is such that it forms a pile in the shape of a cone whose base diameter and height are always equal. How fast is the height of the pile increasing when the pile is 10 ft high?

(13) 11. An airplane is flying at 150 ft/sec at an altitude of 2000 ft in a direction that will take it directly over the observer at the ground level. Find the rate of change of the angle between the line from the observer to the plane and the horizontal, when the plane is directly over a point on the ground that is 2000 ft from the observer.