



درد و داسه
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3.1 3. $\frac{d}{dt} \left(\frac{1}{r^2} \right) = -\frac{2}{r^3} \frac{dr}{dt}$

[illegible][illegible][illegible]

- 15 قۇرئان ئىزىتىش.
- ئۇ دۇنيادىكى بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش.
 - دۇنيادىكى بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش.
 - دۇنيادىكى بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش.
- 14 (سەئىد) قەلبىنى ئۆزگەرتىش، دۇنيادىكى بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش.
- بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش، دۇنيادىكى بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش.
- قەلبىنى ئۆزگەرتىش، دۇنيادىكى بىر قىسىم ئادەملەرنىڭ قەلبىنى ئۆزگەرتىش.
- PR- 19 ئۆزگەرتىش.

- [illegible]

[illegible]

[illegible][illegible]

(۴) $\frac{1}{x^2} = x^{-2}$ $\frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$
 $\frac{d}{dx} \frac{1}{x^2} = -\frac{2}{x^3}$ $\frac{d}{dx} \frac{1}{x^3} = -\frac{3}{x^4}$ $\frac{d}{dx} \frac{1}{x^4} = -\frac{4}{x^5}$
 $\frac{d}{dx} \frac{1}{x^5} = -\frac{5}{x^6}$ $\frac{d}{dx} \frac{1}{x^6} = -\frac{6}{x^7}$ $\frac{d}{dx} \frac{1}{x^7} = -\frac{7}{x^8}$
 $\frac{d}{dx} \frac{1}{x^8} = -\frac{8}{x^9}$ $\frac{d}{dx} \frac{1}{x^9} = -\frac{9}{x^{10}}$ $\frac{d}{dx} \frac{1}{x^{10}} = -\frac{10}{x^{11}}$
 $\frac{d}{dx} \frac{1}{x^{11}} = -\frac{11}{x^{12}}$ $\frac{d}{dx} \frac{1}{x^{12}} = -\frac{12}{x^{13}}$ $\frac{d}{dx} \frac{1}{x^{13}} = -\frac{13}{x^{14}}$
 $\frac{d}{dx} \frac{1}{x^{14}} = -\frac{14}{x^{15}}$ $\frac{d}{dx} \frac{1}{x^{15}} = -\frac{15}{x^{16}}$ $\frac{d}{dx} \frac{1}{x^{16}} = -\frac{16}{x^{17}}$
 $\frac{d}{dx} \frac{1}{x^{17}} = -\frac{17}{x^{18}}$ $\frac{d}{dx} \frac{1}{x^{18}} = -\frac{18}{x^{19}}$ $\frac{d}{dx} \frac{1}{x^{19}} = -\frac{19}{x^{20}}$
 $\frac{d}{dx} \frac{1}{x^{20}} = -\frac{20}{x^{21}}$ $\frac{d}{dx} \frac{1}{x^{21}} = -\frac{21}{x^{22}}$ $\frac{d}{dx} \frac{1}{x^{22}} = -\frac{22}{x^{23}}$
 $\frac{d}{dx} \frac{1}{x^{23}} = -\frac{23}{x^{24}}$ $\frac{d}{dx} \frac{1}{x^{24}} = -\frac{24}{x^{25}}$ $\frac{d}{dx} \frac{1}{x^{25}} = -\frac{25}{x^{26}}$
 $\frac{d}{dx} \frac{1}{x^{26}} = -\frac{26}{x^{27}}$ $\frac{d}{dx} \frac{1}{x^{27}} = -\frac{27}{x^{28}}$ $\frac{d}{dx} \frac{1}{x^{28}} = -\frac{28}{x^{29}}$
 $\frac{d}{dx} \frac{1}{x^{29}} = -\frac{29}{x^{30}}$ $\frac{d}{dx} \frac{1}{x^{30}} = -\frac{30}{x^{31}}$ $\frac{d}{dx} \frac{1}{x^{31}} = -\frac{31}{x^{32}}$
 $\frac{d}{dx} \frac{1}{x^{32}} = -\frac{32}{x^{33}}$ $\frac{d}{dx} \frac{1}{x^{33}} = -\frac{33}{x^{34}}$ $\frac{d}{dx} \frac{1}{x^{34}} = -\frac{34}{x^{35}}$
 $\frac{d}{dx} \frac{1}{x^{35}} = -\frac{35}{x^{36}}$ $\frac{d}{dx} \frac{1}{x^{36}} = -\frac{36}{x^{37}}$ $\frac{d}{dx} \frac{1}{x^{37}} = -\frac{37}{x^{38}}$
 $\frac{d}{dx} \frac{1}{x^{38}} = -\frac{38}{x^{39}}$ $\frac{d}{dx} \frac{1}{x^{39}} = -\frac{39}{x^{40}}$ $\frac{d}{dx} \frac{1}{x^{40}} = -\frac{40}{x^{41}}$
 $\frac{d}{dx} \frac{1}{x^{41}} = -\frac{41}{x^{42}}$ $\frac{d}{dx} \frac{1}{x^{42}} = -\frac{42}{x^{43}}$ $\frac{d}{dx} \frac{1}{x^{43}} = -\frac{43}{x^{44}}$
 $\frac{d}{dx} \frac{1}{x^{44}} = -\frac{44}{x^{45}}$ $\frac{d}{dx} \frac{1}{x^{45}} = -\frac{45}{x^{46}}$ $\frac{d}{dx} \frac{1}{x^{46}} = -\frac{46}{x^{47}}$
 $\frac{d}{dx} \frac{1}{x^{47}} = -\frac{47}{x^{48}}$ $\frac{d}{dx} \frac{1}{x^{48}} = -\frac{48}{x^{49}}$ $\frac{d}{dx} \frac{1}{x^{49}} = -\frac{49}{x^{50}}$
 $\frac{d}{dx} \frac{1}{x^{50}} = -\frac{50}{x^{51}}$ $\frac{d}{dx} \frac{1}{x^{51}} = -\frac{51}{x^{52}}$ $\frac{d}{dx} \frac{1}{x^{52}} = -\frac{52}{x^{53}}$
 $\frac{d}{dx} \frac{1}{x^{53}} = -\frac{53}{x^{54}}$ $\frac{d}{dx} \frac{1}{x^{54}} = -\frac{54}{x^{55}}$ $\frac{d}{dx} \frac{1}{x^{55}} = -\frac{55}{x^{56}}$
 $\frac{d}{dx} \frac{1}{x^{56}} = -\frac{56}{x^{57}}$ $\frac{d}{dx} \frac{1}{x^{57}} = -\frac{57}{x^{58}}$ $\frac{d}{dx} \frac{1}{x^{58}} = -\frac{58}{x^{59}}$
 $\frac{d}{dx} \frac{1}{x^{59}} = -\frac{59}{x^{60}}$ $\frac{d}{dx} \frac{1}{x^{60}} = -\frac{60}{x^{61}}$ $\frac{d}{dx} \frac{1}{x^{61}} = -\frac{61}{x^{62}}$
 $\frac{d}{dx} \frac{1}{x^{62}} = -\frac{62}{x^{63}}$ $\frac{d}{dx} \frac{1}{x^{63}} = -\frac{63}{x^{64}}$ $\frac{d}{dx} \frac{1}{x^{64}} = -\frac{64}{x^{65}}$
 $\frac{d}{dx} \frac{1}{x^{65}} = -\frac{65}{x^{66}}$ $\frac{d}{dx} \frac{1}{x^{66}} = -\frac{66}{x^{67}}$ $\frac{d}{dx} \frac{1}{x^{67}} = -\frac{67}{x^{68}}$
 $\frac{d}{dx} \frac{1}{x^{68}} = -\frac{68}{x^{69}}$ $\frac{d}{dx} \frac{1}{x^{69}} = -\frac{69}{x^{70}}$ $\frac{d}{dx} \frac{1}{x^{70}} = -\frac{70}{x^{71}}$
 $\frac{d}{dx} \frac{1}{x^{71}} = -\frac{71}{x^{72}}$ $\frac{d}{dx} \frac{1}{x^{72}} = -\frac{72}{x^{73}}$ $\frac{d}{dx} \frac{1}{x^{73}} = -\frac{73}{x^{74}}$
 $\frac{d}{dx} \frac{1}{x^{74}} = -\frac{74}{x^{75}}$ $\frac{d}{dx} \frac{1}{x^{75}} = -\frac{75}{x^{76}}$ $\frac{d}{dx} \frac{1}{x^{76}} = -\frac{76}{x^{77}}$
 $\frac{d}{dx} \frac{1}{x^{77}} = -\frac{77}{x^{78}}$ $\frac{d}{dx} \frac{1}{x^{78}} = -\frac{78}{x^{79}}$ $\frac{d}{dx} \frac{1}{x^{79}} = -\frac{79}{x^{80}}$
 $\frac{d}{dx} \frac{1}{x^{80}} = -\frac{80}{x^{81}}$ $\frac{d}{dx} \frac{1}{x^{81}} = -\frac{81}{x^{82}}$ $\frac{d}{dx} \frac{1}{x^{82}} = -\frac{82}{x^{83}}$
 $\frac{d}{dx} \frac{1}{x^{83}} = -\frac{83}{x^{84}}$ $\frac{d}{dx} \frac{1}{x^{84}} = -\frac{84}{x^{85}}$ $\frac{d}{dx} \frac{1}{x^{85}} = -\frac{85}{x^{86}}$
 $\frac{d}{dx} \frac{1}{x^{86}} = -\frac{86}{x^{87}}$ $\frac{d}{dx} \frac{1}{x^{87}} = -\frac{87}{x^{88}}$ $\frac{d}{dx} \frac{1}{x^{88}} = -\frac{88}{x^{89}}$
 $\frac{d}{dx} \frac{1}{x^{89}} = -\frac{89}{x^{90}}$ $\frac{d}{dx} \frac{1}{x^{90}} = -\frac{90}{x^{91}}$ $\frac{d}{dx} \frac{1}{x^{91}} = -\frac{91}{x^{92}}$
 $\frac{d}{dx} \frac{1}{x^{92}} = -\frac{92}{x^{93}}$ $\frac{d}{dx} \frac{1}{x^{93}} = -\frac{93}{x^{94}}$ $\frac{d}{dx} \frac{1}{x^{94}} = -\frac{94}{x^{95}}$
 $\frac{d}{dx} \frac{1}{x^{95}} = -\frac{95}{x^{96}}$ $\frac{d}{dx} \frac{1}{x^{96}} = -\frac{96}{x^{97}}$ $\frac{d}{dx} \frac{1}{x^{97}} = -\frac{97}{x^{98}}$
 $\frac{d}{dx} \frac{1}{x^{98}} = -\frac{98}{x^{99}}$ $\frac{d}{dx} \frac{1}{x^{99}} = -\frac{99}{x^{100}}$ $\frac{d}{dx} \frac{1}{x^{100}} = -\frac{100}{x^{101}}$
 $\frac{d}{dx} \frac{1}{x^{101}} = -\frac{101}{x^{102}}$ $\frac{d}{dx} \frac{1}{x^{102}} = -\frac{102}{x^{103}}$ $\frac{d}{dx} \frac{1}{x^{103}} = -\frac{103}{x^{104}}$
 $\frac{d}{dx} \frac{1}{x^{104}} = -\frac{104}{x^{105}}$ $\frac{d}{dx} \frac{1}{x^{105}} = -\frac{105}{x^{106}}$ $\frac{d}{dx} \frac{1}{x^{106}} = -\frac{106}{x^{107}}$
 $\frac{d}{dx} \frac{1}{x^{107}} = -\frac{107}{x^{108}}$ $\frac{d}{dx} \frac{1}{x^{108}} = -\frac{108}{x^{109}}$ $\frac{d}{dx} \frac{1}{x^{109}} = -\frac{109}{x^{110}}$
 $\frac{d}{dx} \frac{1}{x^{110}} = -\frac{110}{x^{111}}$ $\frac{d}{dx} \frac{1}{x^{111}} = -\frac{111}{x^{112}}$ $\frac{d}{dx} \frac{1}{x^{112}} = -\frac{112}{x^{113}}$
 $\frac{d}{dx} \frac{1}{x^{113}} = -\frac{113}{x^{114}}$ $\frac{d}{dx} \frac{1}{x^{114}} = -\frac{114}{x^{115}}$ $\frac{d}{dx} \frac{1}{x^{115}} = -\frac{115}{x^{116}}$
 $\frac{d}{dx} \frac{1}{x^{116}} =$

(۴) $\frac{1}{x^2} = x^{-2}$ $\frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$

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1. $\frac{1}{x^2} = x^{-2}$ $\frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$

3. $\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = \frac{1}{2} m v \frac{dv}{dt}$
 $\frac{1}{2} m v \frac{dv}{dt} = \frac{1}{2} m v \frac{dv}{dt}$

[illegible][illegible]

5.1 $\frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = \frac{d}{dt} \left(\frac{1}{2} m \dot{x}^2 \right)$

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