ASSIGNMENT 9

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$Question$:;

$Thelogicgatesshowninthedigitalcircuitbelowusestrongpull-downnMOStransistorsforLOWlogic$
$downsareoff, high-valueresistorssettheoutputlogiclevelstoHIGH(i.e.thepull-$
$upsareweak).Notethatsomenodesareintentionallyshortedtoimplement\wiredlogic".$
$SuchshortednodeswillbeHIGHonlyiftheoutputsofallthegateswhoseoutputsareshortedareHIGH.$

$Thenumberofdistinctvaluesof X3X2X1X0(outofthe16possiblevalues)thatgiveY =$
$1is$

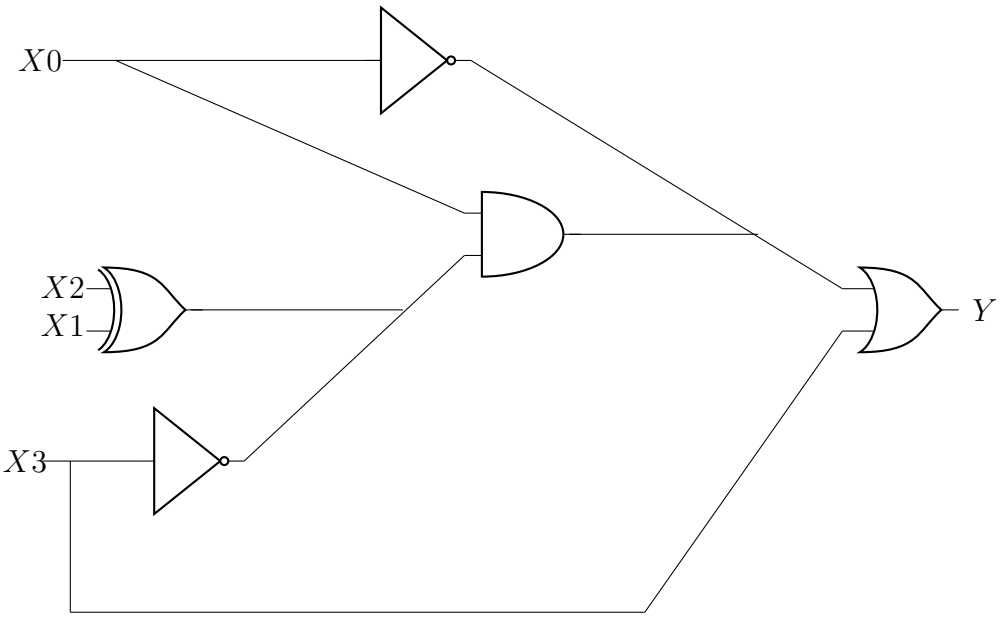
$ANSWERIS: 8\ X0X1X2X3$

$IfX3 = 0, thenbandonX1$

$ifX1 = 0outputis0$

$X1 = 1outputis0$

$Soonly8inputs$



$BOOLEANEXPRESSION\ :\ Y\ =\ (X0)(X3')(X1(X2')\ +\ X2(X1'))\ +\ (X0')\ +\ X3$